

This chapter discusses the direct and indirect environmental consequences of the No-Action Alternative and the Lane Addition Alternatives. The mitigation to be implemented as part of the Lane Addition Alternatives is also discussed. The five build alternatives that were carried forward from Chapter 2—Alternatives and are further studied here are:

- Lane Addition Alternative A
- Lane Addition Alternative B
- Lane Addition Alternative C
- Lane Addition Alternative D
- Lane Addition Alternative E (Preferred Alternative)

Direct impacts are those impacts that occur at the same time and place as the project. Indirect impacts are those impacts that are reasonably foreseeable and are caused by the project but occur later in time or are farther removed from the project. Impacts are also discussed based on the cumulative effects of this project and other past, present, and reasonably foreseeable future projects.

Direct impacts have been considered for the area immediately adjacent to Riverdale Road. For social and economic analysis, the 2000 U.S. census tracts were used as shown in Figure 4.1. The census block groups cover a wider area than the road itself. Thus, while there are very few residences on Riverdale Road, the census blocks include the residential areas north and south of the road.

Indirect impacts consider the surrounding cities of Roy, Riverdale, South Ogden, Washington Terrace, and Ogden and surrounding areas of unincorporated Weber County. Impacts were assessed for the No-Action Alternative and the Lane Addition Alternatives. Some of the impacts and proposed mitigation are the same for all Lane Addition Alternatives. Impacts common to all Lane Addition Alternatives are discussed first in each of the following sections. Any differences based on variations between the Lane Addition Alternatives are then addressed.

4.1 LAND USE IMPACTS

4.1.1 Direct Impacts

4.1.1.1 No-Action Alternative

The No-Action Alternative would not impact existing land use.

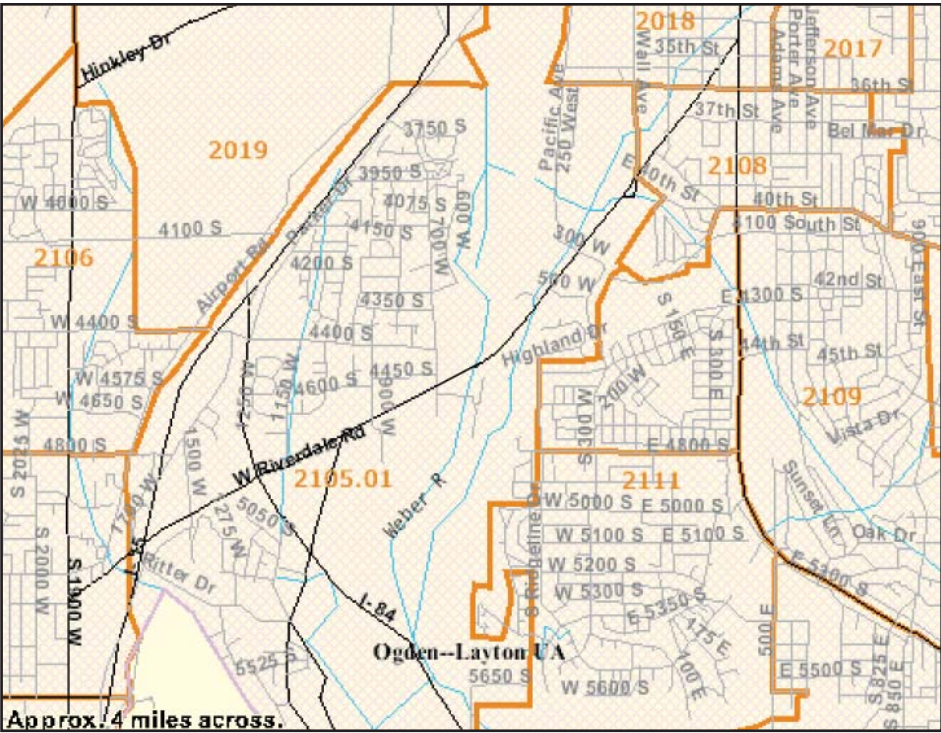


Figure 4.1—2000 U.S. Census Tracts.

4.1.1.2 Lane Addition Alternatives

Proposed improvements to the road and the intersections would require additional ROW at various locations to accommodate the extra travel lanes and shoulders. ROW would be required at several intersections to provide left-turn and right-turn lanes as well as to accommodate adequate turn radii. Land adjacent to the existing roadway would be converted to a transportation facility as discussed below. Portions of this area are already within the existing UDOT ROW. Changing the land to a transportation facility would not affect the overall land use of the area since most of the changes would occur along the roadway in UDOT-owned ROW. All of the Riverdale Road build alternatives are consistent with local and regional land use and transportation plans.

The Lane Addition Alternatives would not affect the commercial orchard at 1403 Riverdale Road. In addition, there will be no impacts to community or public facilities, schools, or churches in the project area.

4.1.1.2.1 Lane Addition Alternative A

Approximately 4.77 acres of new ROW adjacent to the roadway would be required. In addition to the ROW required, 7.8 acres of land within the existing ROW would be converted to a transportation facility. The

required ROW would impact 95 separate parcels. Of the 95 impacted parcels, five would be purchased completely. The ROW takes for Lane Addition Alternative A range from 0 feet to 38 feet north of the existing roadway and from 0 feet to 6 feet south of the existing roadway. Details of the Lane Addition Alternative A ROW and new construction areas are shown in Exhibits 4.1 through 4.8 at the end of this chapter.

4.1.1.2.2 Lane Addition Alternative B

Approximately 4.80 acres of new ROW adjacent to the roadway would be required. In addition to the ROW required, 7.8 acres of land within the existing ROW would be converted to a transportation facility. The required ROW would impact 97 separate parcels. Of the 97 impacted parcels, four would be purchased completely. The ROW takes for Lane Addition Alternative B range from 0 feet to 26 feet north of the existing roadway and from 0 feet to 22 feet south of the existing roadway. Details of the Lane Addition Alternative B ROW and new construction areas are shown in Exhibits 4.9 through 4.16.

4.1.1.2.3 Lane Addition Alternative C

Approximately 4.90 acres of new ROW adjacent to the roadway would be required. In addition to the ROW required, 8.0 acres of land within the existing ROW would be converted to a transportation facility. The required ROW would impact 100 separate parcels. Of the 100 impacted parcels, one would be purchased completely. The ROW takes for Lane Addition Alternative C range from 0 feet to 11 feet north of the existing roadway and from 0 feet to 36 feet south of the existing roadway. Details of the Lane Addition Alternative C ROW and new construction areas are shown in Exhibits 4.17 through 4.24.

4.1.1.2.4 Lane Addition Alternative D

Approximately 4.93 acres of new ROW adjacent to the roadway would be required. In addition to the ROW required, 8.0 acres of land within the existing ROW would be converted to a transportation facility. The required ROW would impact 101 separate parcels. Of the 101 impacted parcels, one would be purchased completely. The ROW takes for Lane Addition Alternative D range from 0 feet to 18 feet north of the existing roadway and from 0 feet to 25 feet south of the existing roadway. Details of the Lane Addition Alternative D ROW and new construction areas are shown in Exhibits 4.25 through 4.32.

4.1.1.2.5 Lane Addition Alternative E

Approximately 4.91 acres of new ROW adjacent to the roadway would be required. In addition to the ROW required, 8.0 acres of land within the existing ROW would be converted to a transportation facility. The required ROW would impact 95 separate parcels. Of the 95 impacted parcels, there would be no relocations. The ROW takes for Lane Addition Alternative E range from 0 feet to 18 feet north of the existing roadway and from 0 feet to 26 feet south of the existing roadway. Details of the Lane Addition Alternative E ROW and new construction areas are shown in Exhibits 4.33 through 4.40.

4.1.2 Indirect Impacts

4.1.2.1 No-Action Alternative

The No-Action Alternative would not result in any indirect land use impacts. Land use in the area would continue to be predominantly commercial and urbanized. Residential areas adjacent to Riverdale Road would be most likely converted to commercial land use over the upcoming years as market conditions and proximity to commercial areas are likely to drive property values upward.

4.1.2.2 Lane Addition Alternatives

The Lane Addition Alternatives would not result in any indirect land use impacts. Land use in the area would continue to be predominantly commercial and urbanized. Residential areas adjacent to Riverdale Road would be converted to commercial land use over the upcoming years. This change in land use would continue with or without the proposed improvements.

4.1.3 Mitigation

To mitigate the impacts to land use, acquisition of the ROW will be conducted according to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

4.2 FARMLAND IMPACTS

Currently, no prime farmlands, unique farmlands, or farmlands of statewide or local importance are located within the project area. The NRCS and the Utah Department of Agriculture and Food (UDAF) have confirmed this finding in their letters of response (see Chapter 8–Comments and

Coordination). Therefore there would be no impacts to farmlands resulting from the No-Action Alternative or any of the Lane Addition Alternatives.

4.3 SOCIAL IMPACTS

4.3.1 Direct Impacts

4.3.1.1 No-Action Alternative

Under the No-Action Alternative, existing demographics and social characteristics of the area would continue to change along with the overall changes occurring in Weber County. There would be no impacts to ROW and no relocations would be required.

4.3.1.1.1 Travel Patterns and Accessibility

Travel throughout the area would become more difficult as Riverdale Road becomes more congested and traffic increasingly uses side streets to bypass this congestion.

4.3.1.1.2 Community and Public Facilities

The No-Action Alternative would not affect community and public facilities. Increased traffic congestion will increase emergency response times during peak traffic periods.

4.3.1.1.3 Neighborhood and Community Cohesion

The No-Action Alternative would not affect neighborhood and community cohesion.

4.3.1.2 Lane Addition Alternatives

Under the Lane Addition Alternatives, changes to the existing demographics and social characteristics of the area would continue along with the changes occurring in Weber County. No residential relocations would be required for this project. Although the proposed improvements would accelerate the conversion of the few remaining residential units on Riverdale Road to commercial use, this change is likely to occur with or without the proposed action due to the existing highly commercial nature of the area.

4.3.1.2.1 Travel Patterns and Accessibility

The improvements to Riverdale Road would reduce congestion and allow it to better serve the surrounding area as the principal access to the inter-

state highway system. The road would remain a major retail destination for the region.

4.3.1.2.2 Community and Public Facilities

The Lane Addition Alternatives are not anticipated to adversely impact community resources or emergency services. By improving the traffic signal systems and reducing congestion, the project would improve the ability of emergency services to move throughout the corridor.

The use of Golden Spike Park would not be impaired due to the proposed improvements. Any impacts to the residential properties along Riverdale Road would not affect the use of the park.

4.3.1.2.3 Neighborhood and Community Cohesion

Community cohesion would not be affected by the proposed improvements. Riverdale Road would continue to divide the adjacent communities to the north and south. The addition of sidewalks between I-15 and I-84 would enhance east-west pedestrian movement through the corridor.

4.3.1.2.4 Relocation Impacts

4.3.1.2.4.1 Lane Addition Alternative A

Of the 91 businesses that would be affected by ROW takes, five businesses would require relocation due to direct impacts.

- **Del Taco at 300 West and Riverdale Road** – ROW would be required, which would limit the available parking. The limited parking area would reduce the viability of the business.
- **Strip Mall at the Northwest Corner of 300 West and Riverdale Road** – ROW would be required, which would limit the available parking. The limited parking area would reduce the viability of the business.
- **Strip Mall at the Northeast Corner of 300 West and Riverdale Road** – Part of the building is within the proposed ROW. The improvements would require the building to be removed or remodeled.
- **Warrens** – The existing drive-through access passes through UDOT ROW. Additional ROW would be required, which would make the existing drive-through access unusable even if the access through the UDOT ROW were allowed.
- **Ogden Muffler and Brake Shop** – The building is immediately adjacent to the existing UDOT ROW. The improvements would directly affect the building.

4.3.1.2.4.2 Lane Addition Alternative B

Of the 93 businesses impacted by ROW takes, four businesses would require relocation due to direct impacts.

- **Del Taco at 300 West and Riverdale Road** – ROW would be required, which would limit the available parking. The limited parking area would reduce the viability of the business.
- **Strip Mall at Northwest Corner of 300 West and Riverdale Road** – ROW would be required, which would limit the available parking. The limited parking area would reduce the viability of the business.
- **Strip Mall at the Northeast Corner of 300 West and Riverdale Road** – Part of the building is within the proposed ROW. The improvements would require the building to be modified.
- **Ogden Muffler and Brake Shop** – The building is immediately adjacent to the existing UDOT ROW. The improvements would directly impact the building.

4.3.1.2.4.3 Lane Addition Alternative C

Of the 95 businesses impacted by ROW takes, one business would require relocation due to direct impacts.

- **Ogden Muffler and Brake Shop** – The building is immediately adjacent to the existing UDOT ROW. The improvements would directly impact the building.

4.3.1.2.4.4 Lane Addition Alternative D

Of the 96 businesses impacted by ROW takes, one business would require relocation due to direct impacts.

- **Ogden Muffler and Brake Shop** – The building is immediately adjacent to the existing UDOT ROW. The improvements would directly impact the building.

4.3.1.2.4.5 Lane Addition Alternative E

Of the 93 businesses impacted by ROW takes, no businesses would require relocation due to direct impacts.

4.3.2 Indirect Impacts

4.3.2.1 No-Action Alternative

The No-Action Alternative indirectly encourages the development of a regional retail center elsewhere in Weber County, as shoppers seek to avoid the increased congestion along Riverdale Road. The population growth projected for Weber County would mean increased buying power and the need for additional retail space. With the No-Action Alternative, it is likely that this increased retail demand would be supplied elsewhere, as convenience and access to existing Riverdale Road businesses would decline with the additional congestion that would develop in the area. There would not be any indirect relocation impacts since no relocations would be required.

4.3.2.2 Lane Addition Alternatives

No indirect social impacts are anticipated due to the Lane Addition Alternatives. Any decrease in sales tax revenue during construction activities would not adversely impact funds flowing to redevelopment project areas along Riverdale Road, as RDA funds are provided by property taxes rather than by sales taxes. The eventual conversion of the few remaining residential units on Riverdale Road to commercial use is likely to occur with or without the proposed action due to the existing highly commercial nature of the area. There would not be any indirect relocation impacts. The businesses that require relocation make up a relatively small amount of the businesses in the area. Those businesses would most likely relocate in the area. There is not a shortage of available commercial property in the area and there is nothing about the relocated businesses that would prevent them from being successful at a different location.

4.3.3 Mitigation

Mitigation for proximity damages and acquisition of property will be conducted according to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Compensation is based on property taken, the damages to remaining property because of its severance from the larger parcel, and damages to the property caused by the construction minus any benefit from the construction activities. Change in the ease of access and loss of business income is not part of justification for compensation under Utah Administrative Code 78-34-10, Compensation and Damages – How Assessed. Loss of parking on current UDOT or city ROW is not part of justification for compensation.

Representatives of the project will continue to communicate with potentially affected residents and business owners throughout the project planning and construction phases to avoid or minimize any problems associated with the proposed project.

4.4 ECONOMIC IMPACTS

4.4.1 Direct Impacts

4.4.1.1 No-Action Alternative

Congestion along Riverdale Road would continue to increase under the No-Action Alternative. As the congestion increases travelers would seek to avoid the area and would choose alternative areas in which to do business. As a result of the congestion, business in the area would decrease and the economy of the area would suffer.

4.4.1.2 Lane Addition Alternatives

Businesses relocated or otherwise affected by ROW acquisition would be compensated according to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. The Act is intended to reduce or eliminate economic impacts of the project. Section 4.3.1.2.4–Relocation Impacts discusses the relocation impacts based on the UDOT ROW acquisition analysis. Economic impacts due to construction activities are discussed in Section 4.21–Construction Impacts. This section of the EIS discusses the economic impacts beyond the construction activities and ROW acquisition process.

The Lane Addition Alternatives would improve the vitality of Riverdale Road as the largest and premier retail destination in Weber County. Although traffic counts are high enough at the present time to attract large national-chain retailers such as Wal-Mart, Target, large auto dealerships, and national fast-food chain outlets and restaurants, the increased future traffic counts would further encourage economic development and allow cities, developers, and property owners to pick and choose those retail developments that are most desirable for Riverdale Road. In addition, traffic flow in the area would increase the exposure of businesses to a larger market. Access to businesses plays a large role in the extent of the economic impacts of a project. Access to businesses would be accommodated by the center left-turn lane and dedicated turning lanes at intersections. The traffic signals would be timed to accommodate the new traffic flow. With the extra travel lanes, the traffic signals would be able to reduce the traffic backup and relieve congestion. Reduced congestion along Riverdale Road would make it easier for people to access adjacent

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businesses. Existing access points would be reconstructed similar to their current condition or would be improved. With these improvements as part of the Lane Addition Alternatives, business access would not be adversely affected; rather, it would most likely be improved.

Businesses rely on adequate parking facilities. Some of the parking areas for several businesses are located near the roadway. These businesses have buildings extremely close to the existing or proposed ROW limits. As the number of available parking spaces decreases, so does the viability of the business, especially when display and storage of vehicles is an essential part of their business. Therefore, eliminating parking spaces could impact Del Taco at 300 West and the strip mall at the northwest corner of the intersection with 300 West for Alternatives A and B. The businesses would not be able to remain viable after the project.

The businesses that could relocate due to viability concerns make up a relatively small portion of the total businesses in the area. These businesses would most likely relocate within the area. There is not a shortage of available commercial property in the area, and there is nothing about the relocated businesses that would prevent them from being successful at a different location.

4.4.2 Indirect Impacts

4.4.2.1 No-Action Alternative

The No-Action Alternative serves to discourage development of a regional retail center in Weber County as shoppers seek to avoid the increased congestion along Riverdale Road. The population growth projected for Weber County would mean increased buying power and the need for additional retail space. With the No-Action Alternative, it is likely that this increased retail demand will be supplied elsewhere, because convenient access to existing Riverdale Road businesses would decline with the additional congestion that would develop in the area.

4.4.2.2 Lane Addition Alternatives

No indirect economic impacts are anticipated due to the Lane Addition Alternatives. Any decrease in sales tax revenue during construction activities would not adversely affect funds flowing to redevelopment project areas along Riverdale Road because RDA funds are provided by property taxes rather than by sales taxes. The eventual conversion of the few remaining residential units on Riverdale Road to commercial use is likely to occur with or without the proposed action due to the existing highly commercial nature of the area.

4.4.3 Mitigation

Mitigation for proximity damages and acquisition of property will be conducted according to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Compensation is based on property taken, the damages to remaining property because of its severance from the larger parcel, and damages to the property caused by the construction minus any benefit from the construction activities. Change in the ease of access and loss of business income is not part of justification for compensation under Utah Administrative Code 78-34-10, Compensation and Damages – How Assessed. Loss of parking on current UDOT or city ROW is not part of justification for compensation.

Representatives of the project will continue to communicate with potentially affected residents and business owners throughout the project planning and construction phases to avoid or minimize any problems associated with the proposed project.

4.5 ENVIRONMENTAL JUSTICE IMPACTS

In accordance with Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d et seq.) and Executive Order 12898, Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations (1994), data on the presence of and effects to minority and low-income populations have been analyzed at the corridor level to ensure that the proposed action does not subject these populations to “disproportionately high and adverse human health or environmental effects.” In addition, efforts were made to include affected communities and populations, including low-income and minority populations, in the public decision-making process. Major public outreach efforts included five public open-house meetings, one focus workshop, one City Council meeting, and development of a project website. The outreach program included a program in which business owners were contacted between February and May 2003 and shown proposed Lane Addition Alternatives. These meetings were held individually or in small groups to solicit concerns about the alternatives presented.

Analysis of the 2000 U.S. Census data determined that large Hispanic populations exist in Weber County (13%) and Ogden (24%). Detailed analysis of the census data was included in Section 3.5–Environmental Justice. This analysis determined that the Wall Avenue to Washington Boulevard analysis zone had the highest percentage of low-income residents and the highest concentration of minority populations, both of which exceed the levels for Weber County overall. This determination reinforced the team’s efforts to reach out to the populations in this area.

The public outreach program was bilingual. Although no requests were made for information in Spanish during the public open houses, comment forms that included a Spanish translation were made available. Additionally, the public information questionnaire that was mailed out in September 2004 included a Spanish translation. During the course of the public outreach campaign, no environmental justice concerns were raised by those contacted or in the comment forms received. In an effort to better reach potential environmental justice populations affected by the project, all public correspondence relating to the project will include a Spanish translation.

4.5.1 Direct Impacts

4.5.1.1 No-Action Alternative

The environmental justice concerns are focused on the Wall Avenue to Washington Boulevard analysis zone. The increase in future congestion would degrade traffic operations to LOS E. This degradation could have a direct impact on this population by affecting mobility and access into businesses and on the minor cross streets. Ingress and egress from driveways would become difficult and potentially unsafe. This could directly impact the viability of the business and restrict economic development. With increased congestion, the quality of life for the residents could be negatively affected. The analysis identified no minority-owned businesses in this analysis zone. No direct impacts to minority-owned businesses are anticipated due to the No-Action Alternative.

4.5.1.2 Lane Addition Alternatives

To identify potential environmental justice concerns, the 2000 U.S. Census data were reviewed and a public information questionnaire was mailed to determine the concentrations and distribution of minority and low-income populations. The purpose of the analysis was to incorporate these populations into the public involvement process. Input from the public outreach process was used to determine whether the anticipated impacts of the Lane Addition Alternatives would have disproportionate and adverse effects on minority and low-income populations.

The public information survey included 38 questions ranging from general interest and knowledge of the project to specific business and residential issues. Information from the responses to the questionnaire coupled with previous information formed the foundation for identifying environmental justice concerns. The responses received encompassed the 3.7-mile corridor with relatively uniform distributions across the study area. The areas that responded to the public information questionnaire are shown in Figure 4.2.

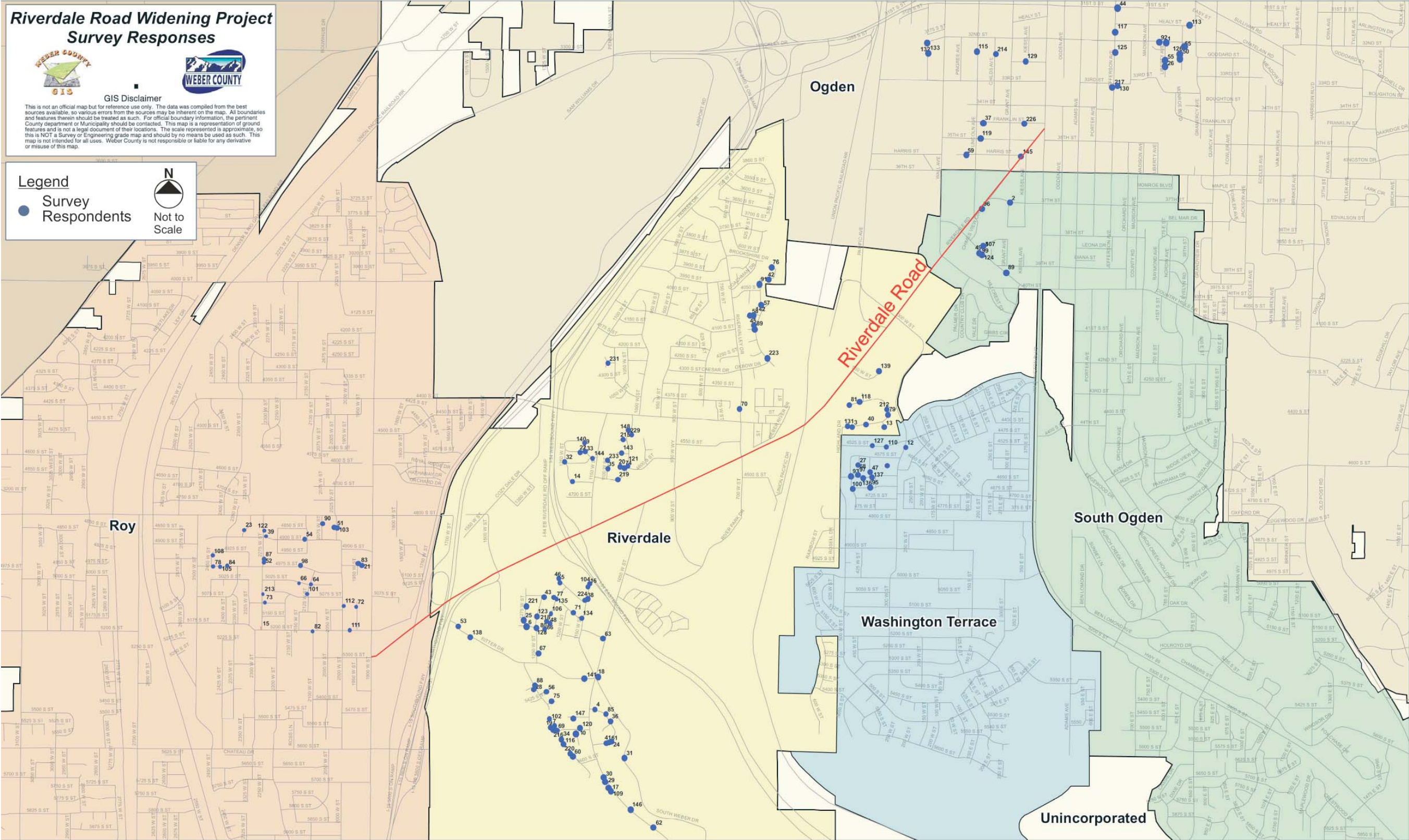


Figure 4.2–Areas Responding to the Public Information Questionnaire.

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Responses from the questionnaire indicated overall support for the Lane Addition Alternatives with 73% in favor the project, 15% against the project, and 12% undecided. This approval included low-income and minority population responses. Of the 11 respondents from the Wall Avenue to Washington Boulevard analysis zone, nine favor the Lane Addition Alternatives.

Up to five businesses could be relocated under the Lane Addition Alternatives, and these businesses comprise a relatively small portion of the total businesses in the area. A field survey of the area had determined that there are other similar businesses near Riverdale Road and that the relocations would not cause adverse affects to the minority and low-income populations in the Wall Avenue to Washington Boulevard analysis zone. These businesses could be re-established within the area. There is no shortage of available commercial property in the area and there is nothing about the relocated businesses that would prevent them from being successful at a different location.

There are no anticipated noise impacts or accessibility issues that would affect any of the environmental justice populations in the Riverdale Road corridor.

The Lane Addition Alternatives would not have disproportionately high and adverse human health or environmental effects on minority or low-income populations. Environmental justice populations would not bear a greater proportion of impacts than any other group.

4.5.2 Indirect Impacts

4.5.2.1 No-Action Alternative

Increased congestion and lack of mobility could have indirect impacts on residents in the Wall Avenue to Washington Boulevard analysis zone. The restricted mobility could result in a less desirable area for businesses and residences. As mobility degrades, businesses affected by failing traffic operations could relocate by choice or permanently close, which would affect the immediate population. Additionally, opportunity for economic development in the area would be stifled. The No-Action Alternative could result in a poorer quality of life for those minority or low-income populations that use Riverdale Road in their daily lives.

4.5.2.2 Lane Addition Alternatives

The Lane Addition Alternatives would reduce future traffic congestion to levels currently experienced today. Although the Lane Addition Alternatives would have direct impacts to the relocated businesses in the

Wall Avenue to Washington Boulevard analysis zone, there is no shortage of available commercial property in the area and there is nothing about the relocated businesses that would prevent them from being successful at a different location. The Lane Addition Alternatives were determined to have no indirect impacts on minority or low-income populations.

4.5.3 Mitigation

There would be no disproportionately high and adverse impacts to minority or low-income populations, so mitigation is not required. The public outreach program will continue to engage the minority and low-income populations in the project area, especially in the Wall Avenue to Washington Boulevard analysis zone. Mitigation of social and economic impacts resulting from the Lane Addition Alternatives throughout the project area, which includes minority and low-income populations, is addressed in Section 4.3–Social Impacts and Section 4.4–Economic Impacts.

4.6 CONSIDERATIONS RELATING TO PEDESTRIANS AND BICYCLISTS

4.6.1 Direct Impacts

4.6.1.1 No-Action Alternative

There would be no improvements or changes made to existing bicycle and pedestrian facilities. The lack of sidewalks between I-15 and I-84 would remain.

4.6.1.2 Lane Addition Alternatives

The proposed improvements would enhance the area for pedestrians by providing sidewalks between the I-15 and I-84 interchanges. The roadway shoulder would provide a buffer between the travel lanes and pedestrians on the sidewalk. At the intersections with traffic signals, crosswalks with pedestrian ramps would be provided to allow pedestrians and bicyclists to cross the roadways on each side of the intersections safely. There would not be any connection between the trail and the sidewalk. All sidewalks and intersection crosswalks would comply with the Americans with Disabilities Act (ADA).

4.6.2 Indirect Impacts

4.6.2.1 No-Action Alternative

There would be no indirect impacts relating to pedestrians and bicyclists resulting from the No-Action Alternative.

4.6.2.2 Lane Addition Alternatives

There would be no indirect impacts relating to pedestrians and bicyclists resulting from any of the Lane Addition Alternatives.

4.6.3 Mitigation

No mitigation is required.

4.7 AIR QUALITY IMPACTS

Localized “hot-spot” concentrations of CO were evaluated using the CAL3QHC software model approved by FHWA and EPA for this purpose. Hot-spot analyses were performed on the 36th Street intersection, which is the expected worst-case intersection (highest traffic volume or worst level of service) in the attainment/maintenance portion of the project study area within the Ogden city limits. Emission rates for this analysis were coordinated with WFRC for the years 2010 and 2030. Background concentrations were coordinated with the Utah Division of Air Quality (UDAQ). UDAQ recommends 8-hour background concentrations of 6 ppm for this area. All other intersections within the corridor outside the Ogden city limits are in an attainment area and are not subject to the conformity requirements.

EPA has not adopted a localized (hot-spot) PM₁₀ analysis methodology; therefore, a quantitative localized analysis is not required until a methodology is adopted. Since quantitative tools are presently unavailable, a qualitative assessment of localized air quality impacts was used.

4.7.1 Direct Impacts

4.7.1.1 No-Action Alternative

Regional conformity is necessary to meet mesoscale air quality requirements. The WFRC LRTP was adopted by WFRC in July 2002 and was found to conform to air quality standards by the U.S. Department of Transportation (USDOT) on August 2, 2002. The No-Action Alternative is not consistent with the WFRC LRTP. Therefore, this alternative does not meet the mesoscale air quality requirements.

- **CO Analysis:** Table 4.1 presents the highest-modeled CO values calculated by CAL3QHC for the No-Action Alternative. The No-Action Alternative has values below the 1-hour standard of 35 ppm and the 8-hour standard of 9 ppm.
- **PM₁₀ Analysis:** The PM₁₀ analysis conducted for the SIP with respect to the WFRC LRTP did not include a No-Action Alternative; therefore, under the No-Action Alternative, regional conformity cannot be demonstrated. Under the No-Action Alternative, it is anticipated that there would be an increase of PM₁₀ emissions of 0.06% as a result of increased vehicle-miles traveled, which is considered negligible. As a result, no NAAQS violations for CO are anticipated.

4.7.1.2 Lane Addition Alternatives

Regional conformity analysis as performed by WFRC is necessary to address mesoscale air quality analysis requirements. The Lane Addition Alternatives are consistent with the WFRC LRTP. The WFRC LRTP was adopted by the WFRC in July 2002 and was found to conform to air quality standards by USDOT on August 2, 2002. Therefore, this alternative meets the mesoscale air quality requirements.

- **CO Analysis:** Table 4.2 presents the highest-modeled values calculated by CAL3QHC for the Lane Addition Alternatives. The Lane Addition Alternatives have values below the 1-hour standard of 35 ppm and the 8-hour standard of 9 ppm. Therefore, the Lane Addition Alternatives meet all microscale requirements of the CAA.
- **PM₁₀ Analysis:** The majority of the 3.7-mile-long project corridor is located in an attainment area for PM₁₀, with the exception of the segment from 36th Street to Washington Boulevard (about 0.25 mile) that is in Ogden. Ogden is designated as a PM₁₀ non-attainment area. Two intersections of the corridor are located in Ogden: Riverdale Road/36th Street and Riverdale Road/Washington Boulevard. Both intersections are about 0.5 mile from the PM₁₀ monitoring station at 228 32nd Street. This station has not reported a PM₁₀ violation since 1993, but has experienced one day in 2002 when this monitor exceeded the particulate NAAQS.

Table 4.1–No-Action Alternative CO Modeling Results – 36th Street.

Analysis Year	NAAQS 1-Hour Standard (ppm)	1-Hour Background (ppm)	1-Hour Total (ppm)	NAAQS 8-Hour Standard (ppm)	8-Hour Background (ppm)	8-Hour Total (ppm)
2010	35	12	13.1	9	6	6.8
2030	35	12	13.0	9	6	6.7

Table 4.2–Lane Addition Alternative CO Modeling Results.

Analysis Year	NAAQS 1-Hour Standard (ppm)	1-Hour Background (ppm)	1-Hour Total (ppm)	NAAQS 8-Hour Standard (ppm)	8-Hour Background (ppm)	8-Hour Total (ppm)
2010	35	12	13.2	9	6	6.8
2030	35	12	13.0	9	6	6.7

According to the air quality conformity analysis of the *WFRC LRTP Update: 2004–2030*, primary emissions of PM₁₀ consist mostly of fugitive dust along with minor amounts of tailpipe soot and particles from brake wear and tire wear. Secondary emissions of PM₁₀ are oxides of nitrogen (NO_x) emissions that can lead to the formation of nitrate particles.

Emissions of road dust increase linearly with increasing vehicle-miles traveled (VMT) but do not exceed the SIP budget for mobile or primary sources of PM₁₀. NO_x emissions would generally decrease to about the year 2020 and then begin a gradual increase due to increased VMT. NO_x emissions remain below the budget established in the SIP for mobile sources, and 2030 emissions of NO_x from automobiles are projected to be lower than current emission levels. Based on these analyses, the proposed alternatives are not likely to trigger any new violations of the PM₁₀ NAAQS.

4.7.2 Indirect Impacts

4.7.2.1 No-Action Alternative

The No-Action Alternative is not consistent with the WFRC LRTP, so this plan as well as the Utah SIP would have to be re-evaluated to determine compliance with the CO and PM₁₀ NAAQS.

4.7.2.2 Lane Addition Alternatives

The Lane Addition Alternatives would not result in any indirect air quality impacts.

4.7.3 Mitigation

- **CO:** No mitigation will be necessary for the Lane Addition Alternatives. Based on the analysis presented, air quality problems are not anticipated; therefore, mitigation is not required.
- **PM₁₀:** No mitigation will be necessary for the Lane Addition Alternatives. Based on the analysis presented, air quality problems are not anticipated; therefore, mitigation is not required. Construction related mitigation is provided in Section 4.21–Construction Impacts.

4.7.4 Air Toxics

4.7.4.1 Project-Level MSATs

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (such as airplanes), area sources (such as dry cleaners), and stationary sources (such as factories or refineries).

Mobile-source air toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

EPA is the lead federal agency for administering the Clean Air Act and has certain responsibilities regarding the health effects of MSATs. On March 29, 2001, EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources (66 FR 17229). This rule was issued under the authority in Section 202 of the Clean Air Act. In its rule, EPA examined the impacts of existing and newly promulgated mobile-source control programs, including its reformulated gasoline (RFG) program, its national low-emission-vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy-duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA forecasts that even with a 64% increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57% to 65% and will reduce on-highway diesel PM emissions by 87% as shown in Figure 4.3.

As a result, EPA concluded that no further motor vehicle emission standards or fuel standards were necessary to further control MSATs. The agency is

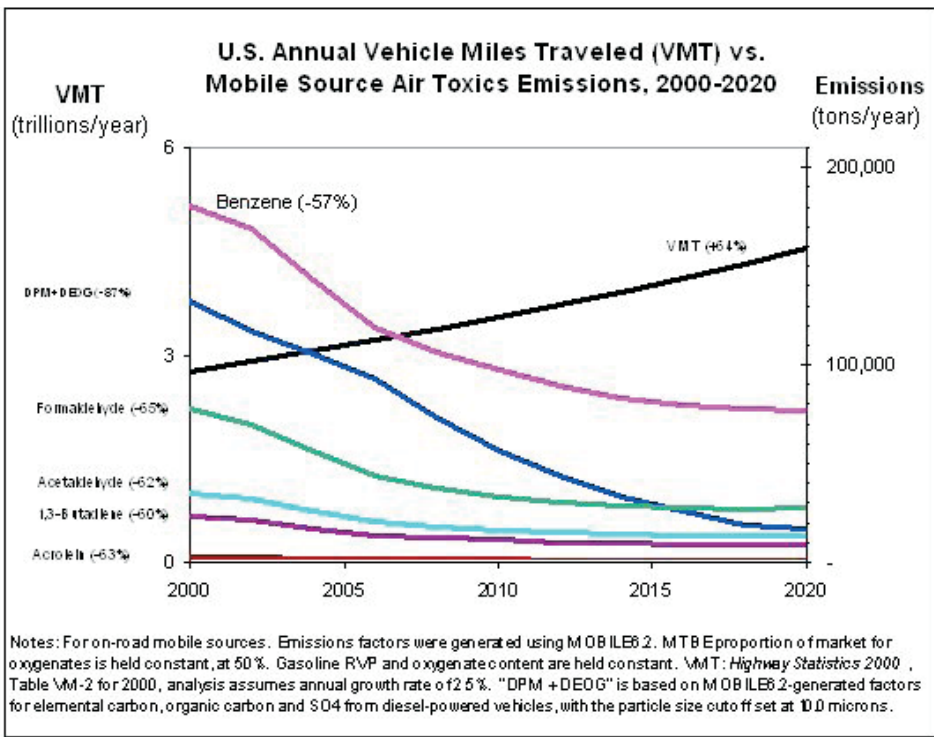


Figure 4.3—U.S. Annual Vehicle-Miles Traveled (VMT) vs. Mobile-Source Air Toxics Emissions, 2000–2020

preparing another rule under the authority of CAA Section 202(l) that will address these issues and could make adjustments to the full 21 and the primary six MSATs.

4.7.4.1.1 Unavailable Information for Project-Specific MSAT Impact Analysis

This EIS includes a basic analysis of the likely MSAT emission impacts of this project. However, available technical tools do not enable us to predict the project-specific health impacts of the emission changes associated with the alternatives in this EIS. Due to these limitations, the following discussion is included in accordance with CEQ regulations (40 CFR 1502.22(b)) regarding incomplete or unavailable information.

Information That Is Unavailable or Incomplete. Evaluating the environmental and health impacts from MSATs on a proposed highway project would involve several key elements including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is hampered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

1. *Emissions.* The EPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables that determine emissions of MSATs in the context of highway projects. Although MOBILE 6.2 is used to predict emissions at a regional level, it has limited applicability at the project level. MOBILE 6.2 is a trip-based model—emission factors are projected based on a typical trip of 7.5 miles and on average speeds for this typical trip. This means that MOBILE 6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE 6.2 can only approximate the operating speeds and levels of congestion that are likely to be present on the largest-scale projects and cannot adequately capture emissions effects of smaller projects. For particulate matter, the model results are not sensitive to average trip speed, although the other MSAT emission rates do change with changes in trip speed. Also, the emissions rates used in MOBILE 6.2 for both PM and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of PM under the conformity rule, EPA has identified problems with MOBILE 6.2 as an obstacle to quantitative analysis.
3. *Exposure Levels and Health Effects.* Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude us from reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (both of which affect emission rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of the toxicity of the various MSATs because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision-makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

These deficiencies compromise the capability of MOBILE 6.2 to estimate MSAT emissions. MOBILE 6.2 is an adequate tool for projecting emission trends and performing relative analyses between alternatives for very large projects, but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific roadside locations.

2. *Dispersion.* The tools to predict how MSATs disperse are also limited. EPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of CO to determine compliance with the NAAQS. The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risks. The National Cooperative Highway Research Program (NCHRP) is conducting research on best practices in applying models and other technical methods in the analysis of MSATs. This work also will focus on identifying appropriate methods of documenting and communicating MSAT impacts in the NEPA process and to the general public. Along with these general limitations of dispersion models, FHWA is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs. Research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show either that some are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of a number of EPA efforts. Most notably, the agency conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database best illustrate the levels of various toxics when aggregated to a national or state level.

EPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at www.epa.gov/iris. The following toxicity information for the six prioritized MSATs was taken from the IRIS database Weight of Evidence Characterization summaries. This information is taken verbatim from

EPA’s IRIS database and represents the Agency’s most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- ***Benzene** is characterized as a known human carcinogen.*
- *The potential carcinogenicity of **acrolein** cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.*
- ***Formaldehyde** is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.*
- ***1,3-butadiene** is characterized as carcinogenic to humans by inhalation.*
- ***Acetaldehyde** is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.*
- ***Diesel exhaust** is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases.*
- ***Diesel exhaust** also represents chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.*

Other studies have addressed MSAT health impacts in proximity to roadways. The Health Effects Institute, a nonprofit organization funded by EPA, FHWA, and industry, has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health outcomes, particularly respiratory problems.¹ Much of this research is not specific to MSATs, but instead surveys the full spectrum

¹ South Coast Air Quality Management District, Multiple Air Toxic Exposure Study-II (2000); Highway Health Hazards, The Sierra Club (2004) summarizing 24 studies on the relationship between health and air quality; NEPA’s Uncertainty in the Federal Legal Scheme Controlling Air Pollution from Motor Vehicles, Environmental Law Institute, 35 ELR 10273 (2005) with health studies cited therein.

of both criteria pollutants and other pollutants. FHWA cannot evaluate the validity of these studies, but more importantly, they do not provide information that would be useful to alleviate the uncertainties listed above and enable us to perform a more comprehensive evaluation of the health impacts specific to this project.

Relevance of Unavailable or Incomplete Information to Evaluating Reasonably Foreseeable Significant Adverse Impacts on the Environment, and Evaluation of Impacts Based on Theoretical Approaches or Research Methods Generally Accepted in the Scientific Community. Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level. Although available tools do allow us to reasonably predict relative emissions changes between alternatives for larger projects, the amount of MSAT emissions from each of the project alternatives and MSAT concentrations or exposures created by each of the project alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. (As noted above, the current emissions model is not capable of serving as a meaningful emissions analysis tool for smaller projects.) Therefore, the relevance of the unavailable or incomplete information is that it is not possible to determine whether any of the alternatives would have “significant adverse impacts on the human environment.”

In this document, FHWA has provided a qualitative assessment of MSAT emissions relative to the various alternatives and has acknowledged that all of the project alternatives could result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain. Because of this uncertainty, the health effects from these emissions cannot be estimated.

4.7.4.2 MSAT Analysis

As discussed above, technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of this project. However, even though reliable methods do not exist to accurately estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions under the project. Although a qualitative analysis cannot identify and measure health impacts from MSATs, it can give a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by FHWA titled *A Methodology for Evaluating Mobile-Source Air Toxic Emissions among Transportation Project Alternatives*, found at www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm.

For each alternative in this EIS, the amount of MSATs emitted would be proportional to the vehicle-miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for each of the Lane Addition Alternatives is expected to be similar or possibly slightly higher than that for the No-Action Alternative because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. If an increase in VMT does occur, it would lead to higher MSAT emissions for the Lane Addition Alternatives along Riverdale Road along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA’s MOBILE6 emissions model, emissions of all of the priority MSATs except for diesel particulate matter decrease as speed increases. The extent to which these speed-related emissions decreases would offset VMT-related emissions increases cannot be reliably projected due to the inherent deficiencies of technical models.

Because the estimated VMT under each of the Lane Addition Alternatives are the same, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions would likely be lower than present levels in the design year as a result of EPA’s national control programs that are projected to reduce MSAT emissions by 57% to 87% between 2000 and 2020. Local conditions could differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes considered as part of the Lane Addition Alternatives would have the effect of moving some traffic closer to nearby homes and businesses; therefore, under each alternative there could be localized areas where ambient concentrations of MSATs could be higher than under the No-Action Alternative. However, as discussed above, the magnitude and the duration of these potential increases compared to the No-Action Alternative cannot be accurately quantified due to the inherent deficiencies of current models. In sum, when a highway is widened and as a result moves closer to receptors, the localized level of MSAT emissions for the alternative could be higher relative to the No-Action Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSATs would be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA’s vehicle and fuel regulations, coupled with fleet turnover, would over time cause substantial reductions that, in almost all

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cases, will cause region-wide MSAT levels to be substantially lower than they are today.

4.8 NOISE IMPACTS

4.8.1 Direct Impacts

Consistent with FHWA regulation 23 CFR 772 and Utah Administrative Code 72-6-111 and 72-6-112, UDOT Noise Abatement Policy 08A2-1, revised March 2004, identifies a traffic noise impact to be a noise-sensitive land use area when the future predicted noise level either (a) equals or exceeds the UDOT NAC criteria, or (b) exceeds the existing noise level by 10 dBA. Sensitive land use areas are defined in the UDOT policy as “residential dwelling units or other fixed, developed sites conforming to activity category A, B, or C.” Table 4.3 shows the NAC for each of the different activity categories based on the UDOT criteria.

Table 4.3–UDOT Noise Abatement Criteria (NAC).

Activity Category	UDOT Noise Abatement Criteria (L _{eq} (h)) (dBA) ^a	Description of Activity Category
A	55 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve intended purpose.
B	65 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	70 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	—	Undeveloped lands.
E	50 (Interior)	Interior of residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

^a Hourly A-weighted sound level in decibels, reflecting a 2 dBA “Approach” value below FHWA 23 CFR 772 values.

Future noise levels along the study area were predicted for the outdoor activity areas of noise-sensitive land use areas. This was performed using FHWA’s Traffic Noise Model 2.5 (TNM) software and the 2030 projected traffic volumes with representative percent truck volumes for the No-Action and the Lane Addition Alternatives. Using the existing measured sound levels, the TNM software calculated and projected the 2030 sound levels for noise-sensitive land use areas along the project study area. The average error of the TNM software is ±0.70 dBA, and predicted noise levels at individual receivers may differ as much as ±3 dBA. The calculated noise levels also vary due to terrain, vehicle speeds, percent of trucks, etc.

The project is in an urban setting along an existing arterial street surrounded by predominantly commercial properties (NAC Category C). The differences in alignments did not contribute to any differences in noise impacts. Many of the existing noise levels approach or exceed the NAC levels previously shown in Table 4.3.

4.8.1.1 No-Action Alternative

Exhibits 4.41 through 4.48 at the end of this chapter show the predicted noise levels along Riverdale Road for the No-Action Alternative. Approximately eight properties would be affected by traffic noise. Although numerous properties are affected by traffic noise as defined by FHWA and UDOT noise policies, all of the predicted noise levels were less than 3 dBA above the existing level, a difference that is virtually undetectable to the human ear.

4.8.1.2 Lane Addition Alternatives

Exhibits 4.49 through 4.88 depict the predicted noise levels along Riverdale Road for Lane Addition Alternatives A through E, respectively. As shown in the exhibits, several commercial and residential areas would be affected by traffic noise according to UDOT and FHWA noise policy. Analysis of 2030 build sound levels determined that there are 56 impacted residences in the Riverdale Road corridor project area. However, most of the noise level increases over existing levels were equal to or less than 3 dBA, the exceptions being receptors R6, R9, and TR28. The predicted increases at these receptors are expected to be 3.1 dBA, 3.5 dBA, and 3.2 dBA, respectively. Table 4.4 shows predicted exterior sound levels for existing, No-Action, and build (Alternative B) conditions at sensitive receptor locations. The difference in alignments for Alternatives A, C, D, and E did not contribute to any perceptible differences in predicted noise levels.

Table 4.4–Predicted Exterior Sound Levels (dBA), Design-Year Conditions.

Receptor Number/ NAC Category	Description	Total Number Dwelling Units	Total Number Impacted Dwelling Units	2030 No-Action Sound Levels	2030 Build Sound Levels
R1/C	—	—	—	69.4	70.5
R2/B	—	—	—	69.4	70.3
R3/C	—	—	—	72.7	74.5
R4/C	—	—	—	73.5	75.3
R5/C	—	—	—	71.5	73.8
R6/C	—	—	—	71.8	75.0
R7/B	—	2	2	71.0	72.3
R8/B	—	5	3	69.4	70.5
R9/B	—	7	—	60.5	63.7
TR8/B	Golden Spike Park	—	—	57.9	59.9
TR23/B	Cherry Creek Apartments	23	6	68.5	70.0
TR24/B	Red Roof Inn	35	35	64.6	66.0
TR28/B	1403 W. Riverdale Road	1	—	61.4	64.4
TR31/B	Mobile Home Park	10	10	63.8	66.5

4.8.2 Indirect Impacts

4.8.2.1 No-Action Alternative

There would be no indirect noise impacts due to the No-Action Alternative.

4.8.2.2 Lane Addition Alternatives

There would be no indirect noise impacts due to any of the Lane Addition Alternatives.

4.8.3 Mitigation

The goal of mitigation is to substantially reduce noise levels, which may or may not result in noise levels below NAC levels. Noise abatement is considered for Type 1 projects where traffic noise impacts are identified. None of the noise levels along Riverdale Road increased by more than 10 dBA. Mitigation measures were considered at areas where the 2030 Lane Addition Alternatives predicted noise levels that exceed these values. According to UDOT’s Noise Abatement Policy, the following criteria must be met before any noise abatement is implemented:

- Provide at least 5 dBA of noise reduction for typical affected residents nearest the roadway.
- Give primary consideration to exterior areas.
- Design the abatement measures according to good design practice, optimal performance, and current highway safety technology.
- Construct the abatement measures within the allowable abatement cost limitation of \$25,000 for each affected residence according to UDOT’s noise abatement policy. This would typically allow a 12-foot-high noise wall about 100 feet in length for each affected residence.
- Determine that the noise abatement measures are both feasible and reasonable.
- Obtain the approval of at least two-thirds of the affected residents/landowners.
- Conform to local regulations.

If all of these conditions are satisfied at any specific location, mitigation measures will be implemented.

The most common mitigation measures are noise barriers consisting of either concrete noise walls or earthen berms. Less-practical measures include traffic management strategies and a change in the horizontal alignment and vertical profile. Noise insulation of public-use or nonprofit institutional structures may be considered for those cases dealing with internal traffic noise. Because of the urban setting and relatively large area required for their construction, berms would not be a practical mitigation strategy for the project and are not considered.

Traffic management strategies such as restricting the use of compression brakes were considered. However, these strategies would not reduce the level of noise by the required 5 dBA. Changes in the alignment and profile are not practicable because this would limit the access the roadway provides to the adjacent properties. For this project, only noise walls were considered to be the practical noise abatement measures.

For noise abatement measures to be incorporated into a project, a feasibility and reasonableness determination must be made. Feasibility focuses on constructability and engineering considerations, while reasonableness is more subjective. Reasonableness implies that common sense and good judgment are applied in arriving at a decision. A feasibility and reasonableness analysis was conducted for all affected receptors (R1 through R8, TR23, TR24, and TR31). The analysis determined that noise barriers are not feasible or reasonable for this project. Noise mitigation for receivers R2, R7, and R8 is not considered practical for single residential units because it would inhibit the sight stopping distance for vehicles entering the roadway at these locations. Noise mitigation was considered at three additional residential locations (receptors TR23, TR24, and TR31). The analysis determined that sound walls at these locations would reduce future traffic noise levels by 1.2 dBA, 1.7 dBA, and 1.5 dBA, respectively. These predicted reductions did not meet the minimum reduction of 5 dBA, so sound walls at these locations are not considered feasible.

Noise walls at receivers R1 and R3–R6 were considered infeasible for the commercial properties (NAC Category C) along Riverdale Road due to the following reasons:

- They have direct access onto Riverdale Road.
- Their proximity to another business that has direct access to Riverdale Road will not allow a wall to be constructed that would provide a 5-dBA reduction in the noise level.
- The outdoor area around the building is used only for parking.
- Constructing a noise wall would greatly restrict the visibility of the business to existing and future clients, therefore creating an economic burden on the business.

Noise levels in excess of the NAC limits would affect the outside areas of the church located at 300 West. Inside noise measurements were not taken or predicted. Mitigation was not considered for this site since the majority of the traffic noise at this location is from 300 West and not Riverdale Road.

Noise mitigation is not required for any of the Lane Addition Alternatives. Mitigation for construction noise is described in Section 4.21.3.3–Noise.

4.9 WATER QUALITY IMPACTS

Road improvements can potentially affect surface waters due to permanent changes in ground surface conditions. Long-term impacts to surface water include the potential increase of surface runoff due to additional impervious surface areas. Also, the increased road surface would require the application of additional salt for roadway de-icing activities during winter storms. This would increase the total dissolved solids (TDS) concentrations in the surface runoff.

For this study, heavy metals (copper, lead, zinc), total suspended solids (TSS), and TDS were evaluated for impacts to surface waters. These constituents were chosen in agreement with and recommended by UDQW. It is estimated that the pollutant concentrations in the surface water runoff are similar to the mean concentrations observed during storm events for Salt Lake County. These pollutant concentrations are shown in Table 4.5. The listed concentrations are consistent with median concentrations listed in FHWA Publication PD-96-032 for urban and rural concentrations in urban highway runoff. Since many of the methods used for estimating pollutant loading have not changed in the last 20 years, it was assumed that the pollutant concentrations listed in Table 4.5 will be applicable for the design year.

Table 4.5–Pollutants of Concern in Surface Water Runoff.

Pollutant	Expected Mean Concentration (mg/L)
Total Copper	0.039
Total Lead	0.031
Total Zinc	0.181
TSS	116
TDS	800

mg/L = milligrams per liter

UDWQ conducts in-stream monitoring on the Weber River. Based on the monitoring results between 1995 and 2005, the mean level of TSS and TDS were 21 mg/L and 291 mg/L, respectively. The mean concentrations for copper, lead, and zinc were all below the analytical detection limit. UDWQ verified that the water quality in the Weber River is quite good by state standards and that there are no notable threats to water quality at this time. However, TSS concentrations are high at times.

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4.9.1 Direct Impacts

4.9.1.1 No-Action Alternative

Existing storm water would continue to be discharged into the Weber River and Burch Creek through the existing systems.

4.9.1.2 Lane Addition Alternatives

Proposed improvements include replacing or using he existing storm drain systems. These systems would continue to discharge into the Weber River and Burch Creek. With the added paved area, there would be more potential to intercept storm water runoff.

The proposed drainage infrastructure features six subsystems (shown in Figure 4.4) and would outfall to a new detention basin, a new proposed city storm sewer, or an existing trunk line of another storm sewer. These subsystems along Riverdale Road are as follows:

- I-15 to 1900 West
- I-15 to Weber River
- Weber River to Burch Creek
- Lincoln Avenue to Burch Creek
- Lincoln Avenue to 36th Street
- 36th Street to Washington Boulevard

The I-15 to 1900 West subsystem is located within the Roy city limits and drains to the west. A proposed 24-inch trunk line, constructed as part of this project, would connect to an existing storm drain at 1900 West and drain to a series of existing detention basins within the city. The storm sewer subsystem along Riverdale Road will be updated as needed to match the proposed roadway but would outfall to the existing storm drain system.

The I-15 to Weber River subsystem is located entirely within the Riverdale city limits and would drain to the east. The proposed detention basins within the I-84 interchange infield area would control the size of the trunk line (a 36-inch line) and restrict the outflow to the proposed Riverdale city storm drain system at 4400 South. The I-84 detention pond would be constructed as part of this project. Riverdale City would construct the 4400 South detention pond and storm water laterals as an independent project.

The Weber River to Burch Creek subsystem also lies within Riverdale. Runoff would be conveyed to the north through a new outfall pipe along 300 West and Pacific Avenue to Burch Creek. A detention basin would be constructed along the west side of Pacific Avenue. This basin, which is

about 12.3 acre-feet in size, would restrict the outflow to Burch Creek. The 300 West outfall and Pacific Avenue detention pond would be constructed by Riverdale City as an independent project.

The Lincoln Avenue to Burch Creek subsystem would connect to the 300 West outfall. The storm sewer trunkline in Riverdale Road would be constructed as part of this project. All runoff within this area would drain the 300 West outfall and into the proposed detention basin at Pacific Avenue.

The Lincoln Avenue to 36th Street and the 36th Street to Washington Boulevard subsystems drain to a trunk line of an Ogden storm sewer system. The storm sewer subsystem along Riverdale Road would be improved as part of this project and updated as needed to match the proposed roadway but would outfall to the existing storm drain system.

The difference between the existing and proposed 10-year storm event runoff in cubic feet per second (cfs) is shown in Table 4.6 for the six subsystems. Due to the extent of existing development and the small increase in impervious area, there is only a 0.9% increase of discharge into the Weber River for the 10-year event resulting from the Lane Addition Alternative.

Table 4.6–Proposed 10-Year Storm Event Runoff.

Road Segment	Existing 10-Year Runoff (cfs)	Proposed 10-Year Runoff (cfs)	Difference (cfs)
I-15 to 1900 West	7.4	7.4	0.0
I-15 to Weber River	62.3	64.0	1.7
Weber River to Burch Creek	115.0	115.6	0.6
Lincoln Avenue to Burch Creek	86.1	86.4	0.3
Lincoln Avenue to 36 th Street	18.0	18.0	0.0
36 th Street to Washington Boulevard	7.6	7.6	0.0

cfs = cubic feet per second

The improvements to the I-15 to 1900 West and 36th Street to Washington Boulevard subsystems would not have an impact on water quality because there is little change between the existing and proposed roadway runoff as shown in Table 4.6. There is a 0.03% increase in flow for the proposed Lincoln Avenue to 36th Street subsystem that would discharge to Ogden. This flow is considered insignificant and has been excluded from this analysis. Although these storm sewers are subject to the UDWQ storm water discharge requirements, the relative contribution from Riverdale Road is 2.6 cfs (1%) above the existing 10-year runoff and is considered minor.

Riverdale City will design their new storm sewer system to meet UDWQ storm water discharge requirements that includes the additional minor flow from this alternative. The City would accomplish this by constructing a detention/retention system at 4400 South and Pacific Avenue. Because the City is responsible for meeting UDWQ storm water discharge requirements, neither a water quantity nor water quality analysis is required for this project.

No drinking water sources for any of the communities would be affected by the proposed action. All water wells and water right points-of-diversion are located outside the proposed improvement footprint; therefore, there would not be any direct impacts to them.

4.9.2 Indirect Impacts

4.9.2.1 No-Action Alternative

There would be no indirect impacts to water quality resulting from the No-Action Alternative.

4.9.2.2 Lane Addition Alternatives

The local communities are currently working together to implement best management practices (BMPs) to address UDWQ requirements and share the cost of appropriate mitigation for water quality with UDOT. The detention ponds at 4400 South and Pacific Avenue are outside the proposed project and would improve the water quality of the two waterways.

No other indirect impacts to water quality would be created by the proposed project.

4.9.3 Mitigation

To minimize impacts to water quality, detention basins will be constructed as part of the Riverdale Road project or by Riverdale City to improve their storm water system to meet UDWQ discharge requirements. As part of the Riverdale Road project, detention basins will be constructed at the infield in the I-84 interchange. Riverdale City will construct detention basins at 4400 South and Pacific Avenue. With the implementation of these storm water improvements, it is not anticipated that water quality standards would be exceeded.

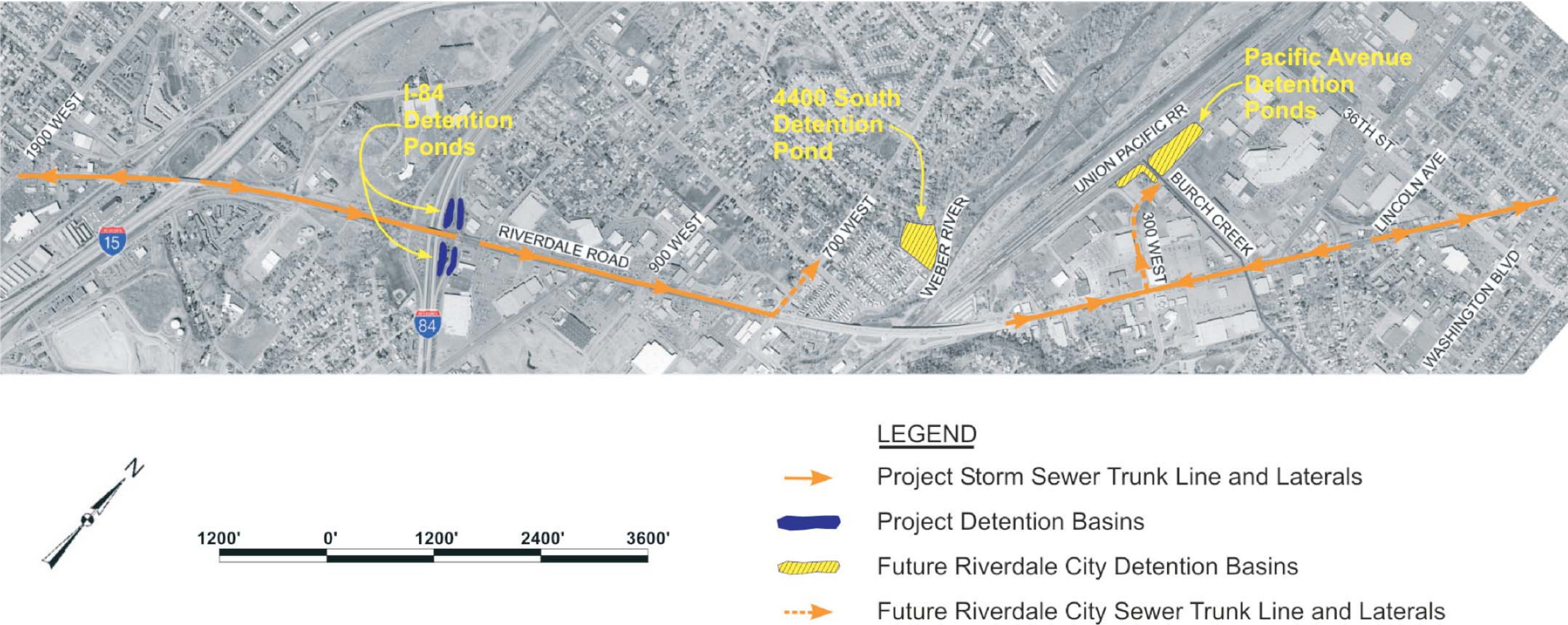


Figure 4.4–Proposed Drainage System Improvements.

4.10 WETLAND IMPACTS

4.10.1 Direct Impacts

4.10.1.1 No-Action Alternative

There would be no direct impacts to wetlands resulting from the No-Action Alternative.

4.10.1.2 Lane Addition Alternatives

Based on a field inspection conducted by USACE on February 6, 2003, it was determined that there are no wetlands within the project area; therefore, no wetland impacts would occur from any of the Lane Addition Alternatives.

4.10.2 Indirect Impacts

4.10.2.1 No-Action Alternative

There would be no indirect impacts to wetlands resulting from the No-Action Alternative.

4.10.2.2 Lane Addition Alternatives

There would be no indirect impacts to wetlands resulting from any of the Lane Addition Alternatives.

4.10.3 Mitigation

No mitigation is required.

4.11 WATER BODY MODIFICATION IMPACTS

4.11.1 Direct Impacts

4.11.1.1 No-Action Alternative

This alternative would not modify any water bodies.

4.11.1.2 Lane Addition Alternatives

The existing bridge on Riverdale Road over the Weber River clear-spans the entire river channel, including the banks. There are no plans by Riverdale City or state or federal agencies to realign, relocate, impound, or divert the river for recreation, water supply, or any other use. Therefore,

no modification to the Weber River would be required as part of the Lane Addition Alternatives.

The Lane Addition Alternatives involve the realignment of the section of Burch Creek that is currently in a piped system under Riverdale Road. Reconstruction and realignment of this piped system would have a direct impact on Burch Creek. However, the impact would be minor and would not affect the overall function or quality of the creek. A Stream Alteration Permit (GP-40) from the Utah Division of Water Rights would be required for the Burch Creek crossing reconstruction.

Coordination with Utah Division of Wildlife Resources (UDWR) and USFWS (Chapter 8–Comments and Coordination) indicates that no direct impacts to wildlife or fish are anticipated.

4.11.2 Indirect Impacts

4.11.2.1 No-Action Alternative

There would be no indirect water body or wildlife impacts from the No-Action Alternative.

4.11.2.2 Lane Addition Alternatives

There would be no indirect water body or wildlife impacts from any of the Lane Addition Alternatives.

4.11.3 Mitigation

No mitigation is proposed for the effect to water bodies as part of this project. The project will comply with the restrictions set forth in the stream alteration permit issued by the Utah Division of Water Rights. Construction plans will include details to ensure that no activities will impact the Weber River or its banks.

4.12 VEGETATION AND WILDLIFE IMPACTS

The Weber River supports riparian vegetation along its banks, wildlife such as deer and elk, various bird habitats, and fish habitats. As stated in Section 3.9–Water Quality, the Weber River is designated as and continues to achieve standards for a class 3A water (supporting cold-water aquatic life).

Burch Creek does not have the potential for fish habitat through the project area due to the extent of piping. Above the mouth of the Burch Creek Canyon, the creek is sustaining and supporting riparian vegetation and

wildlife habitats. As stated in Section 3.9–Water Quality, Burch Creek is designated as and continues to achieve standards for a class 3A water (supporting cold-water aquatic life) above Harrison Boulevard.

4.12.1 Direct Impacts

Overall, no impacts to vegetation or wildlife are expected from the Lane Addition Alternative because the area is highly developed and urbanized. There is very little vegetation adjacent to Riverdale Road, and most of this vegetation is the result of landscaping.

4.12.1.1 No-Action Alternative

There would be no direct impacts to vegetation and wildlife resulting from the No-Action Alternative.

4.12.1.2 Lane Addition Alternatives

During construction, some landscaped and natural vegetation would be disturbed along the project corridor. No direct impacts to wildlife are expected.

4.12.2 Indirect Impacts

4.12.2.1 No-Action Alternative

There would be no indirect impacts to vegetation and wildlife resulting from the No-Action Alternative.

4.12.2.2 Lane Addition Alternatives

There would be no indirect impacts to vegetation and wildlife resulting from any of the Lane Addition Alternatives.

4.12.3 Mitigation

Landscaped and natural vegetation disturbed during construction and not paved as part of the project will be restored by providing topsoil and appropriate seeding and mulching.

4.13 FLOODPLAIN IMPACTS

4.13.1 Direct Impacts

FEMA guidelines apply to this project. FEMA studies are usually conducted based on the existing conditions. For this reason, they reflect the size of the existing structures crossing Riverdale Road. However, since the FEMA studies were conducted, additional detention basins have been constructed on Burch Creek near Glassman Way in South Ogden and near 40th Street and Washington Boulevard in Ogden. The current FEMA studies do not take into consideration the effect of these basins. FEMA studies need to be updated to incorporate these new changes.

4.13.1.1 No-Action Alternative

There would be no direct floodplain impacts from the No-Action Alternative.

4.13.1.2 Lane Addition Alternatives

The existing bridge structure over the Weber River is 199 feet long and spans the designated floodway width of 150 feet. The existing Burch Creek box culvert under Riverdale Road would be reconstructed. The new structure for Burch Creek would be as large as the existing structure (8 feet by 2 feet reinforced concrete box culvert) or larger as needed to accommodate the flows. There would not be any longitudinal or lateral encroachments of the FEMA floodplain for the two water bodies.

4.13.2 Indirect Impacts

4.13.2.1 No-Action Alternative

There would be no indirect floodplain impacts from the No-Action Alternative.

4.13.2.2 Lane Addition Alternatives

There would be no indirect floodplain impacts from any of the Lane Addition Alternatives.

4.13.3 Mitigation

No mitigation is required.

4.14 IMPACTS TO WILD AND SCENIC RIVERS

There are no designated National Wild and Scenic Rivers or rivers under study for designation into the National Wild and Scenic Rivers System in or near the project area.

4.15 IMPACTS TO THREATENED OR ENDANGERED SPECIES

The project is located in a developed environment. Through coordination with the UDOT Wildlife/Wetlands Program Manager and USFWS (see Chapter 8–Comments and Coordination), it was concluded that there are no federally listed threatened, endangered, or candidate species in the study area.

4.15.1 Direct Impacts

4.15.1.1 No-Action Alternative

There would be no direct impacts to threatened or endangered species resulting from the No-Action Alternative.

4.15.1.2 Lane Addition Alternatives

There would be no direct impacts to threatened or endangered species resulting from any of the Lane Addition Alternatives.

4.15.2 Indirect Impacts

4.15.2.1 No-Action Alternative

There would be no indirect impacts to threatened or endangered species resulting from the No-Action Alternative.

4.15.2.2 Lane Addition Alternatives

There would be no indirect impacts to threatened or endangered species resulting from any of the Lane Addition Alternatives.

4.15.3 Mitigation

No mitigation is required.

4.16 CULTURAL RESOURCE IMPACTS

4.16.1 Direct Impacts

4.16.1.1 No-Action Alternative

4.16.1.1.1 Historic Properties

There would be no direct impacts to historic resources resulting from the No-Action Alternative.

4.16.1.1.2 Archaeological Resources

There would be no direct impacts to archeological resources resulting from the No-Action Alternative.

4.16.1.2 Lane Addition Alternatives

4.16.1.2.1 Historic Properties

Properties that are eligible for the NRHP are protected under Section 106 of the NHPA and Section 4(f) of the USDOT Transportation Act of 1966. Chapter 5 of this EIS provides a detailed discussion of the Section 4(f) evaluation. Section 106 requires that the SHPO be consulted regarding the effects of the proposed improvements on the NRHP-eligible properties. Table 4.7 is a summary of the adverse effects to the NRHP-eligible properties. More detailed information is provided in the DOE/FOE included in Appendix A.

Table 4.7–Adverse Effects to NRHP-Eligible Properties within APE.

Prop-erty #	Property Location	Property Description	Lane Addition Alternative				
			A	B	C	D	E
94	3802 Riverdale Road, South Ogden	Farmer’s Insurance	NAE	NAE	NAE	NAE	NAE
108	3555 Riverdale Road, Ogden	Ogden Muffler and Brake Shop	AE	AE	AE	AE	NE
300	Weber Canal at Riverdale, Riverside	Weber Canal	AE	NE	NE	NE	NE

NE = No Effect
NAE = No Adverse Effect
AE = Adverse Effect

Other eligible properties that were evaluated but would not be affected by the proposed improvements are as follows:

- 1450 W. Riverdale Road, Riverdale (listed as 1430 W. Riverdale Road in cultural inventory report)
- 1403 W. Riverdale Road, Riverdale (avoided with retaining wall)
- 3920 Riverdale Road, South Ogden (avoided with retaining wall)
- 3750 Riverdale Road, South Ogden
- 3760 Riverdale Road, South Ogden
- 3748 Riverdale Road, South Ogden
- 3730 Riverdale Road, South Ogden
- 3560–3564 Riverdale Road, Ogden
- 3531 Riverdale Road, Ogden (listed as 3525 Riverdale Road in cultural inventory report)
- 3505 Washington Boulevard, Ogden
- 3417–3427 Riverdale Road, Ogden
- 1900 W. Riverdale Road, Roy
- 1840 W. Riverdale Road, Roy
- 5291 South 1825 West, Roy
- 1725 West 5225 South
- 1727 West 5225 South

4.16.1.2.2 Archaeological Resources

The cultural resource inventory and reconnaissance-level survey identified two archaeological sites within the APE that are eligible for the NRHP. Lane Addition Alternative A would impact Site 300 (42Wb343), a portion of the Weber Canal that crosses under Riverdale Road near Washington Terrace. Lane Addition Alternative A would require the headwall on the north side of Riverdale Road to be demolished and the culvert lengthened. None of the other Lane Addition Alternatives would impact the site.

The Lane Addition Alternatives would not impact Site 239 (42Wb350), a portion of the historic Bamberger Electric Railroad that crosses under Riverdale Road between 1990 West and I-15.

4.16.2 Indirect Impacts

4.16.2.1 No-Action Alternative

4.16.2.1.1 Historic Properties

There would be no indirect impacts to Section 106 historic properties resulting from the No-Action Alternative.

4.16.2.1.2 Archaeological Resources

There would be no indirect impacts to archaeological resources resulting from the No-Action Alternative.

4.16.2.2 Lane Addition Alternatives

4.16.2.2.1 Historic Properties

There would be no indirect impacts to Section 106 historic properties resulting from any of the Lane Addition Alternatives.

4.16.2.2.2 Archaeological Resources

There would be no indirect impacts to archaeological resources resulting from any of the Lane Addition Alternatives.

4.16.3 Mitigation

4.16.3.1 Historic Properties

As agreed to in the MOA, mitigation measures will be implemented based on the Lane Addition Alternative proposed. A Utah intensive-level site recordation will be performed on any properties where a total take is required. Utah intensive-level site recordation will be completed for Sites 108 and 300 depending on the alternative selected.

4.16.3.2 Archaeological Resources

Any archaeological resources identified during construction will be inventoried, evaluated, and a treatment plan implemented in consultation with SHPO and any identified interested parties.

An addendum to the Intermountain Antiquities Computer System Form has been made to document Site 42Wb343 (Site 300) as agreed to in the MOA in the event that Lane Addition Alternative A is implemented. If one of the other Lane Addition Alternatives is implemented, no mitigation measures are required for this site.

4.17 PALEONTOLOGICAL RESOURCE IMPACTS

4.17.1 Direct Impacts

4.17.1.1 No-Action Alternative

There would be no direct impacts to paleontological resources resulting from the No-Action Alternative.

4.17.1.2 Lane Addition Alternatives

There would be no direct impacts to paleontological resources resulting from any of the Lane Addition Alternatives.

4.17.2 Indirect Impacts

4.17.2.1 No-Action Alternative

There would be no indirect impacts to paleontological resources resulting from the No-Action Alternative.

4.17.2.2 Lane Addition Alternatives

There would be no indirect impacts to paleontological resources resulting from any of the Lane Addition Alternatives.

4.17.3 Mitigation

Any paleontological resources identified during construction will be evaluated and a treatment plan implemented in consultation with the Utah Geological Survey and identified interested parties. A MOA stipulating the mitigation measures will be developed and agreed on by FHWA, UDOT, and SHPO.

4.18 IMPACTS TO HAZARDOUS WASTE SITES

4.18.1 Direct Impacts

Based on the Phase I ESA investigations, no additional investigations are recommended for the Riverdale Road improvement project. A letter, provided in Chapter 8–Comments and Coordination, from the Utah Division of Environmental Response and Remediation concurs with these findings.

4.18.1.1 No-Action Alternative

There would be no impacts to existing hazardous waste sites. The lead paint on the I-15 bridge would remain.

4.18.1.2 Lane Addition Alternatives

The Lelis Transmission LUST site poses no threat to humans from the proposed improvements. The proposed roadway project would not affect the three TRI sites located within 1 mile of Riverdale Road. The two CERCLA sites located along Riverdale Road would not affect the roadway project nor would the roadway project affect them.

The I-15 overpass structure would be demolished. The lead-based paint on the bridge, classified as hazardous waste (40 CFR 261), would be disposed of according to policies adopted by the State of Utah. Disposal of the bridge would require special handling to avoid inhalation of dust or ingestion of paint chips by humans and animals. If the bridge material is recycled, it is not considered a construction waste and is not regulated under RCRA. It is likely that a recyclable material of this size and value would be recycled, reducing any potential adverse impacts to the environment. If the bridge material is recycled, the recycler would provide indemnification from liability for the painted materials.

The locations of the monitoring wells installed under the LUST program are currently unknown; therefore, the Lane Addition Alternative could affect them. Construction personnel would be made aware of their existence and would contact the appropriate authority if they are encountered.

4.18.2 Indirect Impacts

4.18.2.1 No-Action Alternative

There would be no indirect hazardous waste impacts from the No-Action Alternative.

4.18.2.2 Lane Addition Alternatives

There would be no indirect hazardous waste impacts from any of the Lane Addition Alternatives.

4.18.3 Mitigation

Special handling will be required during demolition of the I-15 bridge because of the lead paint that is present. An effective worker-protection program will be developed and implemented according to Occupational Safety and Health Administration (OSHA) regulations (29 CFR 1926.20 and 1926.62(e)). Adequate work practices, engineering controls, and respiratory protection will be specified for the demolition process to protect workers and the public from airborne lead contamination.

If hazardous materials are encountered during the construction, the Contractor will notify UDEQ. Waste encountered during excavation will be handled and disposed of in a manner consistent with the Utah remediation standards. The Contractor will not delineate the extent of contamination or remediate the pre-existing release. However, the Contractor will contain, dispose of, and limit the spread of contamination. If further actions are required for clean-up or litigation, UDOT and the previous owners/releasers will remediate the release.

If monitoring wells installed under the LUST program are encountered, the Utah Division of Environmental Response and Remediation will be contacted and the appropriate action taken to either re-establish or decommission the well.

No other mitigation is proposed.

4.19 VISUAL IMPACTS

4.19.1 Direct Impacts

4.19.1.1 No-Action Alternative

There would no direct visual impacts from the No-Action Alternative.

4.19.1.2 Lane Addition Alternatives

The project study area traverses through predominantly commercial and business districts. Proposed improvements to the existing Riverdale Road would likely have positive effects on the visual aesthetics along the study area and its surroundings. The project would incorporate appropriate revegetation plans for temporary impacts involving disturbed areas during construction as well as permanent landscaping features as part of the roadway section, where possible and feasible. This would enhance the aesthetics of this urban setting.

There would be no substantial change to the existing visual setting either for the roadway users or adjacent property owners. Replacement of the I-84 and I-15 bridges would not create any additional visual effects. Retaining walls associated with the bridges and elsewhere along the study area would create a small increase in unnatural surfaces in the area.

Disturbed areas would be revegetated or would become part of the roadway section. Park strips would be planted with sod or paved with colored, stamped concrete to match the adjoining area. UDOT’s standard native seed mix would be used to revegetate the cut slopes between I-15 and I-84 and around the interchanges. Context-sensitive design would be used to complement the appearance of adjacent properties. Retaining walls would be aesthetically treated. The barrier along the I-84 bridge would have an aesthetic treatment as shown in Figure 2.9 in Chapter 2–Alternatives.

No adverse visual impacts are anticipated as a result of this project. There would be no disruption to locally important views, no adversely affected viewscape of a historic property, or any impact to a scenic byway.

4.19.2 Indirect Impacts

4.19.2.1 No-Action Alternative

There would be no indirect visual impacts from the No-Action Alternative.

4.19.2.2 Lane Addition Alternatives

There would be no indirect visual impacts from any of the Lane Addition Alternatives.

4.19.3 Mitigation

No mitigation is required.

4.20 ENERGY IMPACTS

4.20.1 Direct Impacts

The Riverdale Road study area includes heavily urbanized business and commercial areas. Vehicle energy consumption is directly proportional to VMT and vehicle-hours traveled (VHT). Fuel consumption would increase due to the increased VMT and VHT, but would decrease due to technological advances. The existing and projected VMT and VHT for Weber County are shown in Table 4.8.

Table 4.8–VMT and VHT for Weber County.

Weber County	2000	2030 No-Action	2030 Lane Addition Alternatives
VMT ^a	3,400,000	6,200,000	6,200,000
VHT	100,000	200,000	200,000

^a Actual Weber County year 2000 VMT according to UDOT was 4,135,298, so it is important to note that these are unadjusted travel model results. Differences between the models and actual are primarily due to the models not accounting for local streets (hence a 15% error).

4.20.1.1 No-Action Alternative

The Synchro traffic model used for the traffic analysis estimates that gasoline use for the corridor in the afternoon peak is 1,431 gallons of gas per year for the 2030 PM peak hour based on an average fuel efficiency of 10.6 miles per gallon (mpg) on Riverdale Road.

4.20.1.2 Lane Addition Alternatives

Fuel would be consumed as part of the construction activities. In addition, traffic congestion would increase during construction thereby consuming more fuel. Once completed, the Lane Addition Alternatives would lessen congestion, thereby lowering the overall energy consumption compared to the No-Action Alternative. The Synchro traffic model used for the traffic analysis estimates that gasoline use for the corridor would be 1,338 gallons per year for the 2030 PM peak hour based on an average fuel efficiency of 12.9 mpg on Riverdale Road. The Lane Addition Alternatives would consume approximately 100 gallons (about 7%) per peak hour less than the No-Action Alternative in the year 2030 based on the Synchro traffic model analysis.

4.20.2 Indirect Impacts

4.20.2.1 No-Action Alternative

There would be no indirect energy impacts from the No-Action Alternative.

4.20.2.2 Lane Addition Alternatives

There would be no indirect energy impacts from any of the Lane Addition Alternatives.

4.20.3 Mitigation

No mitigation is required.

4.21 CONSTRUCTION IMPACTS

Impacts caused by construction activities can be classified as either temporary or long-term. For comparison and where possible, construction impacts are quantified in terms of lost or increased business and/or sales (where sales information is available).

4.21.1 Direct Impacts

4.21.1.1 No-Action Alternative

There would be no construction impacts from the No-Action Alternative, since no work would be done at this time. As the roadway and bridges deteriorate, there would be construction impacts as those items are addressed. Timing of repairs will be a major concern as the need for bridge and road repairs may not be programmed and accomplished at the appropriate time or in the most efficient sequence.

4.21.1.2 Lane Addition Alternatives

Construction impacts include increased potential for erosion, siltation, noise, dust, inconvenience to motorists, restricted access to adjoining properties, loss of business, utility disruptions, minor drainage problems, increased accident potential, and unsightly appearance. The initial construction cost estimates for this alternative are more than the programmed amounts. This means that the project could not be constructed at one time unless additional funds are made available. Constructing part of the project now and the remaining portions at a later date could create additional impacts. It would extend the duration and amplify the impacts associated with construction. Potential construction-related impacts are discussed below.

4.21.1.2.1 Erosion and Siltation

Construction operations would remove the existing hard surfaces, thus exposing the underlying soils to the elements. The exposed fine-grained materials would be subject to erosion during rain, wind, and snow. The eroded material could then migrate to surface waters downstream in the form of silt. Fine-grained materials brought into the project area as part of the construction activities would also create a potential for siltation if left exposed.

4.21.1.2.2 Noise

Construction equipment as well as the actual construction operations could result in short-term noise impacts of levels of 90 dBA to 100 dBA at 100 feet from the construction area.

4.21.1.2.3 Dust

Construction operations would create dust. Construction operations would remove the existing hard surfaces, thus exposing the underlying soils to the elements. These soils would be subject to wind, thus creating dust. Materials delivered to the job site as part of the construction activities would also create a potential for dust.

4.21.1.2.4 Invasive Species

Construction operations would remove the existing hard surfaces and established vegetation, thus exposing the underlying soils to the potential for being infiltrated by invasive weed species. Materials and equipment delivered to the job site as part of the construction activities would have the potential of introducing invasive weed species into the area through seeds in imported soil or equipment that is not properly cleaned.

4.21.1.2.5 Inconvenience to Traveling Motorists

Traffic movement would be restricted in the area undergoing construction. Through lanes, turn lanes, and driveway approaches would be restricted. Heavy construction equipment would be present and would have to mix with regular vehicle traffic. Traffic control devices and construction activities would reduce the visibility for the traveling public and could create some driver confusion. The restricted traffic movements would cause increased traffic congestion and longer delay times. I-15 and I-84 could experience delays during the bridge demolition and construction.

4.21.1.2.6 Unsightly Appearance

The construction would require that the roadway, sidewalk, and other infrastructure be removed. Construction equipment would be staged near business establishments either overnight or during the day. Materials would be stored near the work area. This would create an unsightly appearance that could discourage customers from the area and decrease sales. Businesses that are close to Riverdale Road could be affected more than those located farther away from the roadway. Owners of businesses close to Riverdale Road are concerned that their shops would seem to be right in the middle of the actual road construction.

4.21.1.2.7 Utility Disruptions

Water and other utilities would require relocation as part of the proposed improvements. Some utility companies and cities would also take this opportunity to improve their systems. The relocation and utility

improvements would require that the utility be shut off for some time to allow the existing utility to be reconnected to the relocated utility.

Despite the best planning efforts, there exists the potential for unplanned utility disruptions during construction. These disruptions occur when utility lines are accidentally damaged and the utility line has to be immediately disconnected or turned off to avoid further impacts to the utility line or adjacent property.

4.21.1.2.8 Safety

The construction activities would disrupt sidewalks and create large excavations. Construction materials and equipment will be located within the construction zone within access of people who fail to stay out of the construction area. Heavy construction equipment would be present and would have to mix with regular vehicle traffic. Traffic-control devices and construction activities would reduce the visibility for the traveling public and could create some driver confusion.

Drivers would make increased use of parking lots as alternative thoroughfares adding to the potential for vehicle/pedestrian and vehicle/vehicle accidents since parking lots are not configured to serve as thoroughfares.

4.21.1.2.9 Economic Impacts

Business access during construction would be affected. Access to and from “mid-block” businesses would be restricted more than those that could be accessed from access routes. Vehicle and pedestrian entrances would be restricted during construction, thus reducing the number of customers that would enter commercial areas between I-84 to Washington Boulevard. Traffic congestion would increase during the construction period, resulting in some people staying away from the area. Visibility of businesses would be restricted.

The major concern for business owners is the loss of sales during the construction period due to the impacts mentioned above. Many businesses expressed concern that the duration of construction in the general area, not only in their immediate block, would affect their sales. Research shows that concerns raised over the potential loss of sales during construction are legitimate. Studies suggest that sales can decline 10% to 60% depending on the nature of the business, the length of time of construction, the length of time that the business has been in operation, the location of the business, alternate access routes to the business, and other factors. For example, when San Jose Boulevard (home to hundreds of businesses in Jacksonville, Florida) was widened, business owners estimated that sales

decreased by 15% to 30% during the entire construction period. Generally, most businesses experience at least a 10% reduction during construction, while some have reported reductions of as high as 60%.

Decreased sales during construction are an especially large concern for businesses that rely heavily on walk-in traffic. Many owners feel that a large number of customers would avoid the area and shop somewhere else. Even destination businesses with a high proportion of repeat customers feel that access from both sides of Riverdale Road is crucial during construction in order to minimize the loss of sales. Some businesses, especially the smaller “mom-and-pop” businesses, fear that the construction would force them out of business.

With the likely loss of sales to the businesses in the area during construction, there would be an accompanying loss of sales tax revenues generated by the businesses on Riverdale Road. If sales on Riverdale Road decline between 15% and 30% during construction (the construction period is expected to last 2 years), this would equal a decrease in gross sales on Riverdale Road of between \$24 million and \$48 million annually with an accompanying local tax revenue decrease of between \$120,000 and \$240,000 annually. Much of the lost sales would be made up elsewhere in Weber County as customers seek out more-convenient places to shop. Therefore, the actual loss in sales tax revenues to the cities would be far less than that calculated above. However, there would be some sales revenue reductions as some customers, especially those who reside in Davis County and who travel north to make retail purchases, would likely shop in other major retail locations such as Layton.

In terms of positive impacts, the construction activity would generate jobs; expenditures by construction employees in the local area for items such as fast food, gasoline, and other convenience purchases; and the sale of road construction materials (assuming that supplies are available locally). Table 4.9 shows the average amounts spent in Utah per person for these retail items. If the construction workers make 20% of their purchases locally for these types of items, the average worker would spend roughly \$447 in the local area during a 1-year period. The total economic impact can be determined by multiplying this average amount by the estimated number of construction workers.

Table 4.9–Average Dollar Amount Spent in Local Area.

Business Type	Utah Average per Capita Sales	Percent Captured in Local Area	Estimated Amount Spent per Worker
Gasoline and Convenience Stores	\$285.59	20%	\$57.12
Other Food Stores	\$57.96	20%	\$11.59
Fast Food	\$315.24	20%	\$63.05
General Merchandise	\$1,350.26	20%	\$270.05
Records/Electronics/Computers	\$226.68	20%	\$45.34
Total	\$2,235.73	—	\$447.15

Long-term impacts include businesses that decide to relocate due to a critical loss of property (that is, building, parking, etc.) or due to the inability to sustain operations through the temporary reduction in sales during construction. It is estimated that a few businesses would not survive the reduction in sales during construction and would be forced to close their doors temporarily or relocate. See Section 4.3.1.2.4–Relocation Impacts regarding the impacts to businesses due to a loss of property.

4.21.2 Indirect Impacts

4.21.2.1 No-Action Alternative

There would be no indirect construction impacts from the No-Action Alternative.

4.21.2.2 Lane Addition Alternatives

There would be no indirect construction impacts from any of the Lane Addition Alternatives.

Chapter 4 - Environmental Consequences

4.21.3 Mitigation

To minimize construction impacts, the following mitigation will be implemented.

4.21.3.1 Phasing

Additional funding might be obtained to allow the entire project to be constructed at one time. If additional funding cannot be obtained, the project will be phased to avoid having construction occur in one area more than once. The phases of construction are presented below in sequential order:

- 1. I-15 to 36th Street
- 2. I-15 interchange bridge
- 3. 36th Street to Washington Boulevard
- 4. 1900 West to I-15

4.21.3.2 Erosion and Siltation

To minimize the temporary impacts to water quality, this project will require a Utah Pollutant Discharge Elimination System (UPDES) General Storm Water Discharge Permit. As part of the requirements of the permit, the project specifications require the Contractor to develop and implement a Storm Water Pollution Prevention Plan (SWPPP). The Plan will contain provisions for controlling the storm water in the project area to reduce erosion and siltation.

4.21.3.3 Noise

Local ordinances related to noise will be enforced. Construction noise will be minimized through the application of the noise abatement measures in UDOT’s current Standard Specifications for Road and Bridge Construction.

4.21.3.4 Dust

To mitigate any temporary air quality impacts due to the construction activities, dust and vehicle pollutant minimization BMPs contained in UDOT’s current Standard Specifications for Road and Bridge Construction will be implemented and monitored. Construction permits from UDAQ will be obtained.

The Utah Air Quality Rules require a dust-control plan from all sources whose activities or equipment have the potential to produce fugitive dust or airborne dust along the Wasatch Front. During construction activities, dust-control plans as outlined in Utah Administrative Code R307-309 will

be required to minimize fugitive dust from pits, yards, storage areas, and areas of operation and to prevent greater than 10% opacity from fugitive dust at the property boundary. A plan will be submitted to UDAQ no later than 30 days after the start of construction.

4.21.3.5 Invasive Species

To mitigate the potential for the introduction of invasive weeds due to construction activities, the invasive weed BMPs in UDOT’s current Standard Specifications for Road and Bridge Construction will be implemented and monitored and included in the plans and specification for the project.

4.21.3.6 Inconvenience to Traveling Motorists

The project specifications would require the Contractor to maintain two lanes of traffic in each direction to remain open between 6:00 AM and 9:00 PM Monday through Saturday including state and federal holidays and every day between Thanksgiving Day and New Year’s Day. The Contractor will be required to complete the majority of the work between 9:00 PM and 6:00 AM. The Contractor will be required to have an active public involvement program to inform motorists of construction activities and to complete construction in segments to limit the time each segment of the roadway is under construction.

4.21.3.7 Unsightly Appearance

An appropriate seeding vegetation and/or landscaping plan will be required to enhance aesthetics. The Contractor will prepare this plan and will be required to maintain and keep the storage area for equipment, materials, and other accessories in a reasonable condition of cleanliness and orderly placement to avoid an unpleasant appearance. The Contractor will promptly remove unused or unnecessary traffic-control equipment.

4.21.3.8 Utility Disruptions

The project specifications will require the Contractor to coordinate with the utility companies to plan work activities such that utility disruptions to a business occur when the business is closed or during off-peak times. Before beginning work, the Contractor is required to contact Blue Stakes to identify the location of all utilities. The Contractor will be required to use care when excavating to avoid unplanned utility disruptions. If utilities are unintentionally disrupted, UDOT will work with the Contractor and the utility companies to restore service as quickly as possible.

4.21.3.9 Safety

The Contractor is required to develop and implement a safety program for the project. The safety program will address the safety of the construction personnel and the traveling public as well as parking lot use and pedestrian traffic. The safety program will address safety issues that arise when the Contractor is present and actively working as well as safety precautions and procedures required when the Contractor is not actively working.

4.21.3.10 Economic Impacts

To mitigate the economic impacts during construction, the project specification will require the Contractor to:

- Provide a weekly newsletter to all businesses along Riverdale Road describing the progress of the construction and upcoming construction events.
- Provide a full-time person who is available 24 hours a day, 7 days a week, to monitor the concerns of businesses and work with construction crews to prevent problems when possible and mitigate issues as they arise.
- Provide business signs along the roadway that identify businesses within the construction limits.
- Hold a monthly meeting with business owners to inform them of upcoming construction activities and to provide a forum for the businesses to express their concerns with the project.
- Perform no work between Thanksgiving Day and New Year’s Day or on state or federal holidays.
- Provide four lanes of traffic with a center turn lane on Riverdale Road between Thanksgiving Day and New Year’s Day. Maintain four lanes of traffic without a center turn lane at all other times except between 9:00 PM and 6:00 AM.
- Perform the majority of the work between 9:00 PM and 6:00 AM in commercial areas. Construction activities in residential areas will be conducted during daylight, non-peak hours.
- Complete construction in segments to limit the time each segment of the roadway is under construction.

The project specifications will include a financial incentive/disincentive clause to encourage the Contractor to minimize the duration it takes to construct the project and the impact to local businesses. The incentive/disincentive clause will solicit input from the business community.

4.21.3.11 Groundwater

The nine water right points-of-diversion will be monitored before, during, and after construction to establish baseline parameters relating to water quality and quantity. Any changes noted during monitoring will be investigated to determine the cause of the change. Once the cause is determined, appropriate corrective action will be taken or the owner will be compensated according to UDOT policies.

4.22 LOCAL SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY

The short-term use of the environment versus preserving its long-term productivity is related to converting the natural productivity of the land, a renewable use, to a developed use that has a relatively short economic life. Improvements to Riverdale Road would be consistent with the local land use and transportation plans and are consistent with regional projections of increases in population. Because most of the study area is already developed, the Lane Addition Alternatives would not alter the long-term productivity of the area.

4.23 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

4.23.1 Direct Impacts

4.23.1.1 No-Action Alternative

The No-Action Alternative would not commit additional natural, physical, human, or fiscal resources since no improvements would be made.

4.23.1.2 Lane Addition Alternatives

Implementation of the proposed improvements involves a commitment of natural, physical, human, and fiscal resources. Land used in the construction of the proposed facility is considered an irreversible commitment during the time period that the land is used for a highway facility. However, if a greater need arises for use of the land or if the highway facility is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion would ever be necessary or desirable.

Historic buildings in the study area would be affected by this alternative as discussed in Section 4.16–Cultural Resource Impacts. Historic buildings demolished as part of the construction are considered irreversible

commitments. The buildings currently occupied by the Ogden Muffler and Brake Shop would be demolished as part of Lane Addition Alternatives A, B, C, and D.

Considerable amounts of fossil fuels, labor, and roadway construction materials such as cement, aggregate, and bituminous material would be expended as part of the Lane Addition Alternatives. Additionally, large amounts of labor and natural resources are used in the fabrication and preparation of construction materials. These materials are generally not retrievable. However, they are not in short supply and their use would not have an adverse effect on the continued availability of these resources. Any construction would also require a substantial one-time expenditure of both state and federal funds, which are not retrievable.

The commitment of these resources is based on the concept that the residents in the immediate area, state, and region would benefit by the improved quality of the transportation system. These benefits would consist of improved accessibility and safety, savings in travel time, and greater availability of services which are anticipated to outweigh the commitment of these resources.

4.23.2 Indirect Impacts

4.23.2.1 No-Action Alternative

The No-Action Alternative would not indirectly commit additional natural, physical, human, or fiscal resources since no improvements would be made.

4.23.2.2 Lane Addition Alternatives

The Lane Addition Alternatives would not indirectly commit any natural, physical, human, or fiscal resources.

4.23.3 Mitigation

Mitigation for the demolition of historic structures consists of performing an intensive-level site survey, which preserves information about the historic structures through documentation. This is covered in more detail in Section 4.16–Cultural Resource Impacts.

4.24 CUMULATIVE IMPACTS

This cumulative impact analysis has been prepared according to the requirements of NEPA and guidance from the CEQ, Considering Cumulative Effects under the National Environmental Policy Act (CEQ 1997). The CEQ regulations (40 CFR 1500–1508) implementing the procedural provisions of NEPA define cumulative effects as:

The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal, or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time [40 CFR 1508.7].

4.24.1 Cumulative Impact Issues

According to the CEQ’s cumulative impacts guidance, the cumulative impact analysis should be narrowed to focus on important issues at a national, regional, or local level. The analysis should look at other actions that may have similar effects and whether a particular resource has been historically affected by cumulative actions. Within the northern Wasatch Front and in the project area, the issues of concern on a local and regional level have been the loss due to urban encroachment of wetlands, threatened and endangered species, wildlife habitat and biological diversity, and farmlands. The urban encroachment has also degraded water and air quality in the region. Therefore, the resources considered in this cumulative impacts analysis are wetlands, threatened and endangered species, wildlife habitat, farmlands, water quality, and air quality.

4.24.2 Cumulative Impact Analysis

For this project, few direct or indirect impacts are expected as a result of the roadway widening since most of the project area is developed. Since the 1840s when the first developments were built in the project area, it has transitioned from undeveloped land to an area with farmlands and limited development to an area with commercial and residential development and limited farmlands. This development trend appears to be continuing as existing farmlands and open areas are converted to residential and commercial development. Along Riverdale Road there is very little undeveloped land, and the proposed project would not change the existing development trends occurring along the corridor and in nearby areas.

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No threatened or endangered species or wetlands were noted in the project area. Since most of the area is currently developed and the area that would be affected by roadway widening is limited, there would be no impacts to wildlife habitat or farmlands (see each resource section in this chapter for specific details). Therefore, the Riverdale Road project would not contribute to cumulative impacts to any of these resources.

There would be only a small change in impervious surface area as a result of the proposed project since most of the adjacent land that would be converted to roadway use is already developed as parking lots or other impervious surfaces. A portion of the storm water that currently sheet-flows off adjacent impervious surfaces such as parking lots would be collected and treated with the roadway runoff, which would improve overall water quality in the area. Because the project would likely improve overall water quality, it would not contribute to cumulative water quality impacts.

WFRC analyzed this project for air quality as part of the regional transportation plan, which considers the cumulative impact to the region’s air quality. The proposed project is in conformity with the WFRC LRTP. The reduction in congestion would result in improvements to local and regional air quality; therefore, the project would not contribute to regional air quality impacts.

4.24.3 Conclusion

As a result of the above analysis, this project is not expected to result in cumulative impacts to the natural or built environments.

4.25 PERMITS

Below is a listing of the permits that are required and would be obtained upon implementation of the Lane Addition Alternatives:

- A Stream Alteration Permit (GP-40) from the Utah Division of Water Rights would be acquired for Burch Creek crossing reconstruction.
- An air quality permit from UDAQ would be acquired before the start of construction.
- A UPDES General Storm Water Discharge permit would be acquired before the start of construction.
- A UDWQ permit would be required before construction.

4.26 SUMMARY OF IMPACTS AND MITIGATION MEASURES

4.26.1 Direct Impacts

4.26.1.1 No-Action Alternative

A summary of direct impacts due to the No-Action Alternative is listed below:

- **Economic Impact:** Congestion would continue to increase and as a result people would avoid the area. As a result, the economy of the area would suffer.
- **Air Quality:** Air quality would continue to deteriorate and would not be in conformance with air quality standards.
- **Noise:** Noise levels that exceed acceptable levels would impact several properties.
- **Water Quality:** Water quality in the Weber River and Burch Creek would continue to degrade because more traffic debris would enter them.
- **Hazardous Waste:** The lead paint on the Riverdale Road bridge would remain in place.

4.26.1.2 Lane Addition Alternatives

See Table 4.10 for a summary of the direct impacts caused by the Lane Addition Alternatives after mitigation measures are implemented. As shown in the table, the impacts would vary based on the Lane Addition Alternative selected. See Table 4.11 for a summary of the mitigation measures proposed as part of the Lane Addition Alternatives.

Table 4.10–Summary of Direct Impacts from Lane Addition Alternatives.

Impacts	No-Action Alternative	Lane Addition Alternatives				
		A	B	C	D	E
Land Use Impacts (acres) (New Right-of-Way Required)	0.0	4.77	4.80	4.90	4.93	4.91
Number of Total Parcels Requiring ROW ^a	0	95	97	100	101	95
Businesses	0	91	93	95	96	93
Residential	0	4	4	5	5	2
Parks	0	0	0	0	0	0
Total Relocations ^b	0	5	4	1	1	0
Businesses	0	5	4	1	1	0
Residential	0	0	0	0	0	0
Parks	0	0	0	0	0	0
Farmland Impacts	N	N	N	N	N	N
Social Impacts	N	N	N	N	N	N
Economic Impacts ^c	0	4	4	4	4	4
Environmental Justice Impacts	N	N	N	N	N	N
Pedestrian and Bicycle Impacts	N	YB	YB	YB	YB	YB
Air Quality Impacts	N	YB	YB	YB	YB	YB
Parcels with Noise Impacts	0	56	56	56	56	56
Water Quality Impacts	N	YB	YB	YB	YB	YB
Wetland Impacts (acres)	0.0	0.0	0.0	0.0	0.0	0.0
Water Body Modifications and Wildlife Impacts	N	N	N	N	N	N
Floodplain Impacts	N	N	N	N	N	N
Recreational Sites Impacted	0	0	0	0	0	0
Historic Sites Adversely Impacted	0	1	1	1	1	0
Archaeological Sites Adversely Impacted	0	1	0	0	0	0
Hazardous Waste Impacts	N	N	N	N	N	N
Visual Impacts	N	N	N	N	N	N
Energy Impacts	N	N	N	N	N	N
Construction Impacts	N	Y	Y	Y	Y	Y
Cumulative Impacts	N	N	N	N	N	N

^a Does not include temporary construction easements.
^b Included in previous totals.
^c Includes only those businesses with reduced viability after the project is complete due to current use of UDOT right-of-way.
YB = Impacts considered beneficial
N = No
Y = Yes

Table 4.11–Summary of Mitigation Measures.

Environmental Component	Mitigation Measures
Land Use	Acquire ROW in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.
Right-of-Way	Acquire property and relocate businesses in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.
Economic Resources	Evaluate proximity damages and remaining property value when acquiring property.
Water Quality	<ul style="list-style-type: none">• Monitor the nine water right points-of-diversion before, during, and after construction. Note any changes to the water quality and quantity and investigate to determine the cause of the change. Once the cause is determined, take appropriate corrective action or compensate the owner in accordance with UDOT policies.• Construct storm water detention basins at the I-84 interchange.• Obtain UDWQ construction permit.
Vegetation and Wildlife	Landscaped and natural vegetation disturbed during construction and not paved as part of the project will be restored by providing topsoil and appropriate seeding and mulching.
Historic Properties	Perform a Utah intensive-level site recordation for Sites 108 and 300 depending on the alternative selected.
Archaeological Properties	Inventory any archaeological properties discovered during construction. Develop and agree to a treatment plan stipulating any additional mitigation measures to be implemented if Alternative A is selected.
Paleontological Resources	Any paleontological resources identified during construction will be evaluated, and a treatment plan implemented in consultation with Utah Geological Survey, and identified interested parties. A MOA stipulating the mitigation measures will be developed and agreed upon by FHWA, UDOT, and SHPO.
Recreational Sites	No mitigation is proposed. Wall to be constructed as an avoidance alternative.
Hazardous Waste	Implement worker protection program in accordance with OSHA regulations (29 CFR 1926.20 and 1926.62(e)) and specify adequate work practices, engineering controls, and respiratory protection for the demolition of the I-15 bridge. Notify UDEQ if hazardous materials are encountered during the construction. Excavate, dispose of, and limit the spread of contamination in a manner consistent with the Utah remediation standards. Contact the Utah Division of Environmental Response and Remediation if monitoring wells installed under the LUST program are encountered.
Construction	<p>Phasing: Obtain additional funding, if possible, to allow the entire project to be constructed at one time. If additional funding cannot be obtained, phase the project to avoid having construction occur in an area more than once.</p> <p>Erosion and Siltation: Obtain a UPDES General Stormwater Discharge Permit. Develop and implement an SWPPP.</p> <p>Noise: Enforce local noise ordinances. Implement noise abatement measures contained in UDOT’s current Standard Specifications for Road and Bridge Construction.</p> <p>Dust: Implement and monitor BMPs contained in UDOT’s current Standard Specifications for Road and Bridge Construction. Obtain construction permits from UDAQ. Develop, obtain approval for, and implement a dust-control plan.</p> <p>Invasive Species: Implement and monitor UDOT’s current Standard Specifications for Road and Bridge Construction.</p> <p>Inconvenience to Motorists: Keep two lanes of traffic in each direction open between 6:00 AM and 9:00 PM Monday through Saturday including state and federal holidays and every day between Thanksgiving Day and New Year’s Day. Complete the majority of the work between 9:00 PM and 6:00 AM. Have an active public involvement program to inform motorists of construction activities. Complete construction in segments to limit the time each segment of the roadway is under construction.</p> <p>Unsightly Appearance: Implement an appropriate seeding vegetation and/or landscaping plan. Maintain and keep storage areas for equipment, materials, and other accessories in a reasonable condition of cleanliness and orderly placement. Remove unused or unnecessary traffic-control equipment promptly.</p> <p>Utility Disruptions: Coordinate with the utility companies to plan work activities so that utility disruptions to a business occur when the business is closed or during off-peak times. Contact Blue Stakes to identify the location of all utilities before beginning work. Use care when excavating to avoid unplanned utility disruptions. Restore service as quickly as possible if utilities are unintentionally disrupted.</p> <p>Safety: Develop and implement a safety program for the project.</p> <p>Economics: Provide a weekly newsletter to all businesses along Riverdale Road describing the progress of the construction and upcoming construction events. Provide a full-time person, available 24 hours a day, seven days a week, to monitor the concerns of businesses and work with construction crews to prevent problems when possible and mitigate issues as they arise. Provide business signs along the roadway that identify businesses within the construction limits. Hold a monthly meeting with business owners to inform them of upcoming construction activities and to provide a forum for the businesses to express their concerns with the project. Perform no work between Thanksgiving Day and New Year’s Day or on state or federal holidays. Perform the majority of the work between 9:00 PM and 6:00 AM in commercial areas. Complete construction in segments to limit the time each segment of the roadway is under construction. Provide a financial incentive/disincentive clause to encourage the Contractor to minimize the duration it takes to construct the project and the impact to local businesses.</p>

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